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THE SEASON'S COMPLIMENTS.

YOU who read this, whatever your place in the world's rubber trade, are given our Happy New Year. May 1915 bring prosperity and content. May all race prejudice vanish and wars cease. May efficiency and fair-dealing, wealth and integrity, join hands.

OUR CONTEMPORARIES

SINCE the great war's beginning scores of trade journals large and small have ceased to exist. This is particularly true in England, Germany and France. Those that remain are perforce the necessary ones. At the same time, with the unavoidable curtailment of advertising, the disintegration of subscription lists and slow collections, the burden of publishing has been greatly augmented.

The English "India Rubber Journal" is one of the few to continue to appear regularly and shows no sign of slacking in interest. Congratulations and felicitations!

The "Gummi-Zeitung" also arrives regularly, having been interrupted for some four issues only. In subject matter and as a whole it bears no evidence of unusual conditions at home or abroad. Or, more exactly, there is one difference—no market quotations for crude rubber are appended as of yore. A letter from Editor Springer in another column gives a good idea of rubber conditions in Germany.

Our very interesting contemporary "Le Caoutchouc & la Gutta-Percha" has unfortunately been forced to suspend publication. A. D. Cillard, its able editor, writes as follows:

"All our collaborators and workers are at the firing line. Some of them have already fallen on the field of honor. We have no one any longer here. There is no business and the losses experienced by our publication, 'Le Caoutchouc & la Gutta-Percha,' are such that its existence is compromised, unless some powerful firms consent to come to its help. But we do not venture to count on this. This is our situation. It is most painful for us who have taken such pains to produce this review."

THE RUBBER EMBARGO.

THE Rubber Embargo has not been lifted. The newspapers from time to time say that it has, but they are in error. In the meantime, the American Rubber Committee have done everything possible at Washington and are in close touch with the British Committee in London. Very wisely, they have insisted on keeping the rubber embargo separate from all other embargoes, as, for example, wool, graphite, etc. They are also at work upon a form of guarantee, which it is hoped will be acceptable to the British Government. In this connection a newspaper note that is going the rounds is of special interest. It reads:

"A continuance of the rubber embargo for a protracted period will have the result of putting a large number of people out of employment. It will also raise prices to consumers of rubber goods to almost unprecedented figures, and will particularly affect every user of an automobile. If the American manufacturers are obliged to depend upon rubber from Brazil, which would seem almost inevitable if this embargo is indefinitely continued, they will be in the position of manufacturing their goods from rubber purchased at an extraordinarily high price, with the possibility that at any time Great Britain might decide under certain conditions to raise this embargo. This would immediately bring the price of crude rubber down to practically a normal figure, and leave the manufacturers with a stock of merchandise on their

hands manufactured at a high cost. In this case a deplorable condition would arise and it might be necessary to seek the aid of Congress to place a temporary embargo on crude rubber and rubber products from Great Britain, so that American manufacturers might know where they stand and be protected against incalculable loss.

It is very much to be hoped that Great Britain will realize the injustice which is being done to American rubber manufacturers, particularly as these manufacturers and the rubber importers are undoubtedly willing to give a guaranty that they will not export to her enemies rubber or such manufactured articles as may be declared contraband of war."

THE RUBBER INDUSTRY 25 YEARS AGO AND NOW.

THIS is not a history of the growth of the rubber industry in the United States for the last 25 years. A book of 1,000 pages written by a master of condensation would not contain the story, for no other American industry has made such strides in the last quarter century.

These few paragraphs can only hope to project some of the most striking features in that development and to show the contrast between the rubber trade in 1889, when this publication first appeared, and at the present time. During these 25 years the rubber industry of the United States has increased tenfold in its capitalization, fourfold in the value of the manufactured product, fourfold in the number of employes and sixfold in volume of its exports. In 1889 the total capitalization of the rubber manufacturing companies in the United States was about $40,000,000; the consumption of rubber amounted to 16,000 tons; the number of people employed was 20,000, and the value of manufactured product $60,000,000. Now, the capitalization is about $400,000,000; the annual consumption of crude rubber amounts to 50,000 tons; the number of people employed exceeds 80,000, and the value of the finished product is in the neighborhood of $240,000,000.

But in surveying the last two and a half decades of the American rubber industry, the most striking feature is not this great general growth, but rather the entrance into the field and the rapid development of several new factors entirely unknown 25 years ago but which today are of commanding importance.

First there is the automobile tire, which now uses fully one-half of the rubber supply of the world; which consumes more crude rubber today than the whole world produced 25 years ago; which is made and consumed to the number of 9,000,000 a year in the United States alone, with a value of $125,000,000. And yet when the first issue of THE INDIA RUBBER WORLD was published there was not an automobile tire in existence. There were bicycle tires, and they were made in fairly large numbers, for the bicycle fever was then nearing its height, but there was no auto. tire, because there was no automobile.

There was then no manufacture of aeroplane or dirigible fabric, and the balloon as a practical utility was undreamed of. The construction of balloons and aeroplanes is not yet an extensive industry in the United States, but across the sea great advancement has been made, especially in Germany, whose military achievements have been much assisted by these overhead scouts.

Another marked development that has taken place during the last 25 years has been the advent of the great corporation. In 1889 there was hardly a company engaged in rubber manufacture in this country that was capitalized at over $1,000,000. Now there are four companies alone whose combined outstanding capital is over $200,000,000.

But the most important development of the quarter century just past is not in the direction of manufactures or finance, but in the direction of the crude supply—in the development of the rubber plantation. If the trade were still dependent on the wild product of the South American and African forests, rubber manufacture would only have reached half its present proportions, for it would have only half its present supply of material. In 1889 the output of the Amazon country was about 16,000 tons; in 1914 it was 40,000 tons, but constituted only 40 per cent. of the world's supply. To be sure, under the stimulus of the higher prices that would have accompanied a restricted supply, wild rubber regions would have been more exhaustively exploited, but they could not have possibly yielded a total equal to the 70,000 tons which the plantations will be easily capable of producing during the present year. With the success of the plantation now overwhelmingly demonstrated, there is positive assurance—or as positive as any human assurance can be—that, no matter what demands the trade may make in the future, the supply will always suffice.

Accordingly, of all the developments of the last 25 years in the rubber industry, the plantation, with its assurance of perennial plenty, is far the greatest.

SOME GREETINGS ON OUR 25TH BIRTHDAY.

ON October last THE INDIA RUBBER WORLD completed its first quarter century. Twenty-five years of continuous publication at least shows vitality; and when it is accompanied by constant growth in size and in sphere of influence it betokens good health. An increase from 50 pages, the average number per issue during our first year, to 150 pages, the average number in each issue during the past year, is proof positive of sound conditions and good circulation.

There are comparatively few journals associated with any industry, either in this country or abroad, that have reached their twenty-fifth milestone, and fewer still that have continued for this length of time under the same editorial management. We cannot help feeling that the record of this publication has been quite creditable and have been greatly pleased that so many members of the rubber trade agree with us in this opinion. Several pages of this issue are devoted to letters of greeting and congratulation from friends—by some of whom this publication has received a monthly welcome since its first number. There is a noticeable unanimity in these tributes to the effect that this journal has always been absolutely independent and continuously helpful to the trade. We have been rather disposed to pride ourselves on these two qualities. An industrial publication that is not independent and helpful certainly has no excuse for being.

THE INDIA RUBBER WORLD has sought not only to be helpful in the way of chronicling all news of interest to the trade, describing promptly and fully all important inventions, new processes and discoveries, but—a matter of far greater importance—it has sought so to interpret present events as to show the probabilities of the future and thus to help its readers to shape their course with a view to coming conditions. This has been particularly true of its attitude toward rubber plantations, the desirability of which—in fact the inevitable necessity for which—it has preached constantly almost from its first number, although for several years its preaching fell on deaf ears. During the last decade, however, it has had the profound satisfaction of seeing the leading American manufacturers take a substantial interest in this great field of rubber enterprise. This is only one instance in which this journal has worked unremittingly for the welfare of the whole rubber trade, at home and abroad.

With a constantly increasing staff; with correspondents in all of the world's rubber centers, and with the wish to be of still greater service to the trade in the future, we enter upon the second quarter century.

A RUBBER REPRESENTATIVE IN LONDON.

THE decision of the Rubber Club of America to have representation in London at the present time is of especial interest. Mr. Betram G. Work, President of The B. F. Goodrich Co., who sailed for England December 30 on the "Lusitania," is just the man for the place. He is as familiar with European rubber conditions as he is with American. He is personally friendly with the leaders of the rubber trade over there. His company has large interests in England and a factory in France. Moreover, he is eminently fair, forceful and sagacious.

AMERICAN MANUFACTURERS AND THE WAR.

WHEN we get plenty of rubber, which we are bound to do in time, the trade should prosper because of the war. The home market for shoes, clothing, rubber sundries, etc., will not be affected noticeably. With big crops, agricultural rubber goods, as elevator belts, will be needed. Railroad equipment will also be in demand. Special goods such as footwear, ground sheets and sundries for the belligerents will find a good market. The tire business, truck and motor, should show a constant increase.

On the other hand, the embargo, by raising the price of rubber here, has caused a loss of millions of dollars, particularly for those who had to fill contracts.

It will therefore be some time before the American manufacturer is anything but a loser by the war.

IN 1913 ENGLAND, FRANCE AND RUSSIA USED 38,000 tons of rubber. Today, with many of their factories working night and day on army and navy orders and using government specifications that call for high grade goods, they are using more rubber than ever before.

On December 1 they had in sight 9,500 tons of rubber of all kinds. That would mean about three months' supply for the Allies. It is likely that the British Government, to be on the safe side, would consider that a six months supply must be in sight before they would be safe. With much of the plantation rubber and all of the Africans coming to London, it will be probably February 1 before a surplus, say of 20,000 tons, accumulates.

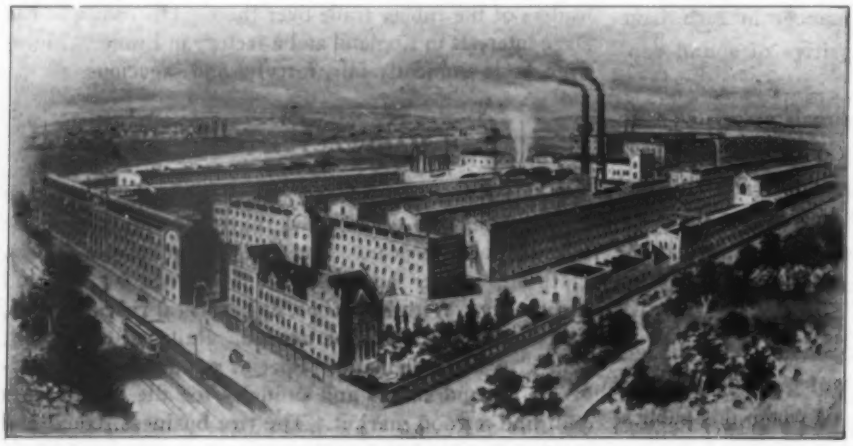
WHAT, WITH THE NEWS SUPPRESSED OR CENSORED for military reasons, do we actually know of the war's progress? Take the latest Suez Canal rumor for example:

"A strong force of Turks led by German officers appeared at (place marked out by censor). They succeeded in getting possession of a strip of the canal some ten miles in length. This they took up and removed on camels to (name blotted out). It is supposed that they have cut it into ten-foot sections and will ship it to (name deleted) to use as trenches for their troops."

With censorship of this sort how can we know whether or not rubber from the Far East will still come along?

The Rubber Industry of Germany.

THE peculiar position of Germany today—hemmed in by enemies on almost every side and shut off from nearly all of those parts of the world with which commerce has hitherto been carried on—makes that country particularly interesting at the present time.



TYPE OF MODERN GERMAN RUBBER FACTORY.

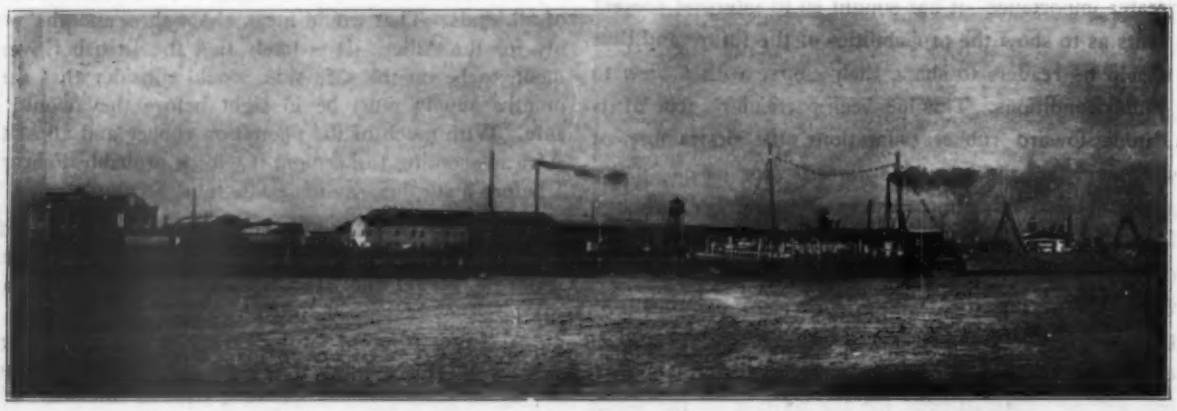
Though many people in the rubber trade may have had rather a hazy idea of Germany's position in the industry of the world, it probably will surprise no one to know that for many years previous to the outbreak of this unhappy war Germany had stood second to the United States in the extent of its rubber manufacture. In the matter of rubber exports it led the United States almost three to one, the German exports of rubber manufactured goods last year amounting to $32,000,000, while those from the United States amounted to only a little over $12,000,000. In the early part of the present year Germany could count 600 rubber manufacturing plants, of which number 150 were companies of large size and importance in the trade. These plants gave occupation to over 40,000 workmen and were annually turning out manufactured goods to the value of about $80,000,000.

The growth of the rubber industry in Germany has practically paralleled the development of the industry in the United States. The first rubber factory was started in Germany in 1829, near Berlin. This was just about the time that the first attempts were being made in this country to utilize the product of the South American rubber forests. The first German factory was devoted to the manufacture of rubber thread and elastic fabrics, but, as Goodyear's vulcanization process had not then been discovered, the success of this early venture was probably no more marked than was the case in the various factories that sprung up in New England from 1830 to 1840.

Rubber footwear was first made in Germany in 1850, in a factory built at Mannheim, by the Etablissement Hutchinson, of Paris, which, in turn, by the way, was founded by Hiram Hutchinson, an American. In the same year the manufacture of insulated cables was started, a line in which Germany has been pre-eminently successful, the cable works in that country being for many years past the largest in the world. In 1856 the first German factory for the manufacture of hard rubber was started, being devoted to the making of combs by a process secured from Conrad Poppenhusen, of the India Rubber Comb Co. of New York.

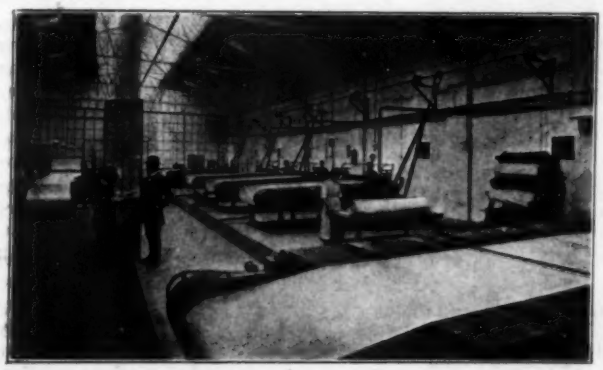
But just as the growth of the rubber industry in the United States was very slow up to the time of the Civil War, similarly, rubber manufacture developed slowly in Germany until the Franco-Prussian War, after which, in company with every other German industry, it advanced with marked rapidity.

Before 1880, German rubber manufacturers confined themselves almost exclusively to mechanical and surgical goods, druggists' sundries, footwear and garments, but with the advent of the pneumatic tire for bicycles, in the 80's, tire making was introduced into a number of the German factories, and with the appearance of the automobile this industry in Germany began to grow with tremendous rapidity, until it consumed nearly one-half of the crude rubber used in German factories. Last year the tire product of that country amounted to $38,000,000 in value, of which tires to the value of $14,000,000 were exported,



ONE OF THE GREAT GERMAN SUBMARINE CABLE WORKS, WITH CABLE STEAMER IN FOREGROUND.

England taking about one-fourth, France nearly as much, the remainder being shipped all over the world. Another addition to the list of rubber manufactures, which took place about thirty years ago, was the making of toys, in which German manu-



SPREADER ROOM FOR BALLOON FABRIC.

facturers also became very proficient, a sufficient proof of which has been the prevalence of German-made rubber toys in the American market during the last half dozen years.

The development of German manufacturing can be seen at a glance from the following brief table, which shows the number of factories at different periods during the last fifty years and the number of employes connected with these factories.

These figures embrace all lines of rubber manufacture where crude rubber is washed, mixed and prepared in the factory in which the goods are finished. Tire repair shops are not included:

	Number of Factories.	Persons Employed.
1861	36	1,788
1875	120	5,635
1882	243	7,666
1895	450	13,114
1907	539	31,909
1914	600	40,000

Another gage of the growth of the rubber industry in Germany is found in the notable increase in the imports of crude rubber into that country. In 1889 they amounted to 4,000 tons; ten years later nearly 14,000 tons; in 1909, a little over 27,000 tons, and in 1913 about 29,000 tons. To be sure, not all of this rubber was retained by the German manufacturers, from one-quarter to one-third of it being exported in this crude condition, the exports in 1889 equaling 700 tons; in 1899, over 5,000 tons; in 1909, 9,000 tons, and in 1913, 10,000 tons. This left for German consumption at the three periods, 1889, 1899 and 1909, something over 3,000, 8,000 and 18,000 tons, respectively, while in 1913 the rubber used by German manufacturers was 19,000 tons. Perhaps the most interesting statistical phase of the German rubber industry lies in the increase in exports of its manufactured goods. German rubber goods exports in 1889 were valued at about $5,800,000; in 1899 at $13,000,000; in 1909 at $14,000,000, and in 1913 at $32,000,000.

The Germans have been particularly successful in the discovery and use of rubber substitutes. They have also led the world in their long continued and systematic search for synthetic rubber. It will undoubtedly be remembered that Dr. Duisberg, Director General of the Farbenfabriken, of Elberfeld, read a most interesting paper on synthetic rubber at the International Congress of Applied Chemistry, held in New York in September, 1912. He displayed at that time a set of tires made of this artificial product, another set having been made and presented to the Kaiser. Dr. Duisberg and his co-laborers, Drs. Fritz Hofmann and Carl Harries, are celebrated among chemists for the work they have been doing for a number of years past on the absorbing problem of synthetic rubber.

In a general way it may be said that during the last few decades rubber manufacture in Germany has been a highly progressive and successful department of German industry. It received that same scientific, painstaking, systematic attention that Germans have devoted to every industrial and commercial branch. Unlike American or British, German manufacturers have received a great amount of the most valuable help from the universities and technical schools. In other words, the government helped in every way possible.

Of the 600 companies, large and small, engaged in various kinds of rubber manufacture, there were at the beginning of this year about 10 important companies making tires, nearly the same number engaged in the production of rubber footwear, at least 20 large companies making cables—and probably 15 important manufacturers of rubber machinery, among them the famous house of Krupp. There are quite a number of rubber manufacturing companies in Germany that have been established over 50 years, and a long list which have been in business over a third of a century; and some of these companies are of a magnitude that would compare favorably with the large rubber manufacturing corporations of the United States. For instance, there is the Continental India Rubber & Gutta Percha Co., Hannover, which normally employs 7,000 workmen; the

MAKING GAS BAGS FOR WAR BALLOONS.

Vereinigte Harburg-Wien Gummiwarenfabriken, the Vienna factory employing 4,500 people, and the Harburg 2,500 workmen. The total capitalization of the German rubber industry at the beginning of this year was $25,000,000, and it might be safely said that this capitalization was conservative. The industry undoubtedly had a working capital of twice that sum, while its annual output of finished goods was from three to four times its capitalization.

The enterprising and courteous founders and heads of the great German rubber factories are men known the world over—Seligman, Prinzhorn and Dr. Gerlach of the Continental; Hoff of the Harburg-Wein; Clouth of Cologne-Nippes; Calmon of Hamburg; Spannagel of Berlin; Sierke of the Gummi-Kamm; not to forget the scholarly Dr. Traun, and many others.

The German accomplishments in hard rubber have been wonderful. This is true not only in the production of technical articles that have found a market all over the world, but in the most difficult art work. For example, there is the beautiful 6 foot statue of Arminius, prince of the Cherusci, after his victory over the Roman legions under Varus. This statue was modeled by Engelhard, of Hannover, molded in hard rubber, in one piece, at the Traun factory at Hamburg.

STATUE OF ARMINIUS, MADE OF HARD RUBBER.

In addition to the importation and manufacture of rubber, Germany has taken a deep interest in developing rubber producing sources in its various protectorates, namely —German East Africa, German Southeast Africa, Cameroon and Togo. The receipts of rubber from these four foreign possessions have quite steadily increased during the last eight years. In 1908 they equaled 1,341 tons; the following year 1,645 tons; in 1910 2,566 tons, and in 1913, 4,000 tons.

To be sure, last year rubber manufacturing in Germany, in common with the industry elsewhere, suffered something of a recession in its output and its profits, owing to the general conditions that obtained all over the commercial world. But had it not been for the war, that situation would undoubtedly have been but temporary. With the breaking out of hostilities, however, the German industry received a staggering blow. Under the circumstances it is naturally difficult to get detailed information as to industrial conditions in the Kaiser's empire. Not only is every news channel officially guarded, but private letters received from German manufacturers seek to convey such an impression of fairly normal and healthful conditions that one cannot help feeling that patriotism supplies a color to the picture that accuracy would not warrant.

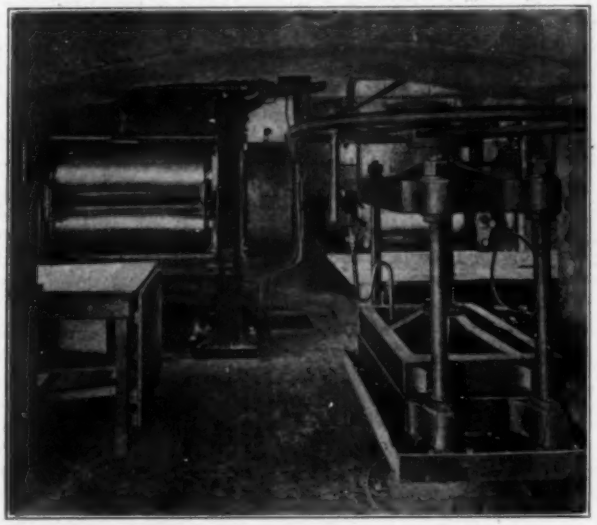
Enough information, however, that has come through the barriers that surround that Empire to show that, as one would naturally expect, the only rubber factories running on full time and with large orders ahead are those working for the military equipment of the German army, making tires for the army autos., balloon fabrics, cables, footwear and clothing for the soldiers, rubber sheets which they may interpose between themselves and the damp ground when they lie down at night, and other necessary kinds of equipment for the men in the field. Naturally, the consumption of rubber goods by those not engaged at the front has fallen off tremendously. The manufacture of what might be termed the unnecessaries—that is, sporting goods, balls, toys, and all articles coming under the general classification of luxuries—has been stopped absolutely. The sale of tires has practically been taken over by the government. Private users are not permitted to purchase any tires which are good enough for military use. In fact the whole rubber manufacture of Germany is under government supervision, and the chemists and workmen necessary to carry out the government orders in rubber factories have, wherever possible, been exempt from military duty. But in other factories, whose output is not so essential for the operations at the front, the roster of workmen has been, of course, greatly depleted, so that inadaquacy of help and extreme difficulty in securing transportation are two of the many burdens that the German rubber trade has to bear.

But the one paramount question with the German rubber mills is not so much a market for their finished goods as a supply of the crude material. It is not likely that Germany had stored away any large supply of crude rubber. That is shown by the fact that over one-third of the crude rubber imported into Germany in 1913 was exported during the year. The probability is that the supply in stock on the first of August was not greatly in excess of the supply a year ago. While the Kaiser's military experts no doubt believed that a war was on its way, they confidently expected that it would be a short war and soon over, and therefore did not think it necessary to make provision against any long suspension of commercial communications. To be sure, some crude rubber has found its way into Germany via Holland and Sweden

SUNDRIES' DEPARTMENT IN GERMAN RUBBER FACTORY.

in the north and Italy and Switzerland in the south, but the amounts received through these channels must necessarily have been small and are likely to be discontinued altogether. The latest quotations on crude rubber in Germany show that it is selling for over twice its price in London and New York markets. If the war should continue another year, with conditions as they are at present, the Allies having a fairly free sweep of the seas, the German manufacturers would certainly be in a sad quandry over the matter of supplies. Many of the factories, as a matter of fact, have already been closed.

But even if the war were to stop tomorrow, the loss to the German rubber industry would be enormous. Granted that the



PACKING DEPARTMENT IN A GERMAN FACTORY.

manufacturers of that country could quickly recover their former markets in South America and other neutral countries, it must be remembered that their largest customers were their near neighbors; and it is hardly likely that the people of England, France and Belgium will look with any favor on goods stamped "Made in Germany" for many years to come.

This story of the rubber situation in Germany would hardly be complete without referring to the courage with which the German manufacturers have borne their losses and the generosity that they have displayed toward their workmen. Practically all the large companies are supporting the families dependent upon employes who have gone to the front—and this notwithstanding the large and continuous drain upon their resources.

THE AMERICAN RUBBER INDUSTRY PARALYZED.

A paragraph in a recent German paper, speaking of the embargo on exports of rubber from all English ports and its effect upon the United States, remarks that the American rubber industry is paralyzed. Which is another proof that one is obliged often to go far from home to get the news.

The American Association of Commerce and Trade in Berlin, organized in 1903, with offices at Friederich-Strasse 59-60, by American citizens engaged in business in Berlin, to foster commercial relations between the two countries, is issuing weekly reports on general conditions in Germany during the present crisis. A report just received contains an item to the effect that the secretary of the association, Professor George S. Atwood, was at the time of publication—November 12—in the United States, and that he would be pleased to receive and answer any inquiries directed to him in care of the National City Bank.

RUBBER AT THE SAFETY SHOW.

AT the International Exposition of Safety and Sanitation, held at the Grand Central Palace, New York, during December, rubber was more or less in evidence, and in some exhibits quite important.

The most spectacular part of the show was the demonstration of the efficacy of the "Lungmotor." This is a double cylinder arrangement, designed to assist those who for any reason whatever have ceased to breathe. It has an equipment of rubber tubes and rubber mouthpiece, which would place it in the category of rubber appliances. The spectacular part of it was when a young lady professional swimmer exhibited its use in a large tank full of water.

Very many of the exhibits showed as incidentals old and new types of hose. The B. F. Sturtevant Co., Boston, exhibited a vacuum cleaner, with many lengths of ordinary vacuum hose; the Pullman Co. exhibited a huge vacuum cleaner with correspondingly large hose for cleaning "Pullman" cars; the West Disinfecting Co. showed their protector equipped with special hose for sterilizing passenger car water coolers; while the New York Edison Co. showed 4-inch, wire-wound hose, connected with a special blower for ventilating gas-containing manholes. Speaking of the Edison company, aside from the insulated wire they use for their hundred and one devices, they exhibited huge rubber sleeves for overhead line protectors, insulated platforms for use in manholes, special linemen's rubber gloves, insulated screw-drivers, etc., etc. Quite in their line was the projector of The Precision Machine Co., Inc., New York, which is electrical and uses much insulated wire.

Something that makers of rubber diving suits may look upon with doubt is the aluminum diving armor of the Submarine Diving & Recovering Co., New York. While this may do away with a certain amount of rubber it still needs air hose, insulated wire for the diver's telephone, etc.

Speaking of armors leads one up to the "Nasdco" breathing helmet, which enables a man to walk in the smokiest conflagration and breathe pure air from the feed hose that drags on the ground behind him. In this connection it is proper to mention the exhibit of Covers rubber respirators, which in a measure serve the same purpose.

There was a variety of novelties shown in the line of special sundries, such as the vibrator of The Stevens Invention Co., vacuum massage brushes and rolls, the Stevens pocket vaporizer and chemists' rubber goggles of the Willson style. The Life Extension Institute, Inc., showed a great variety of therapeutical instruments in rubber, glass and steel. There was also the Emil Greiner Co.'s apparatus for the analysis of mine gases, which employs rubber tubing and rubber gas bags.

In up-to-date novelties there was the Lightning vehicle washer, with its rubber protected sponge and length of hose; the American Washing Co.'s washer, with its rubber cylinders and their suction cells; the Morrison foot suction grip ladders, made of high grade red rubber; the Angell elevator safety lock, rubber padded at each end.

In the line of automobiles was the "Telescopic" fender from Cleveland, and the Elastic Safety Buffer of New York—both rubber in part.

Of interest also to the rubber men was the "Clipper" belt lacer, and a ladle for those who make soft metal molds shown by the Western Electric & Manufacturing Co., East Pittsburgh, Pennsylvania. This ladle is so arranged that no matter how full it is it always pours from the bottom.

The Bristol Co., Waterbury, Connecticut, among other things, showed their patented safety set screws and incidentally advertised the fact that companies like the Rubber Regenerating Co., Goodyear's Metallic Rubber Shoe Co., John A. Roebling's Sons Co. and other rubber men were users of them.

What Rubber Manufacturers Want in Crude Rubber.

By The Editor.

[Suggestions to Rubber Growers, for Guidance When the Embargo is Lifted.]

IN the first place, they want rubber, plenty of it, all the time. They want it at a fair price, the same price that their neighbors pay. They desire clean rubber, but can use dirty rubber at a price that will pay them to clean it.

There are certain rubber manufacturers who are always in the market for new types of wild rubber as well as for grades that only appear in small lots and at infrequent intervals. This is not because these grades are better than those that are standard, but, being untried, are viewed with doubt and have not a ready market; hence, those who can use them get such rubber at low prices. Certain grades of rubber that are standard also become scarce for a time, or are in such demand that the price becomes relatively high. Manufacturers then substitute other grades, or they mix two or more indifferent grades and get by the amalgamation a product equal to a higher grade. Such substitution and amalgamation, however, is the result of conditions and is not sought for. In the long run the great variety of grades, with their wide variations in cleanliness, wetness, texture, physical shape, resin contents, etc., is a distinct disadvantage and a bar to efficiency.

One needs only to glance back over the rubber market of the past ten years to note that there have been from 50 to 60 grades of Brazilian, 20 to 30 of Central and 50 to 60 African brands constantly available; and in addition a half hundred bastard rubbers that were used in times of high prices.

If there were only one grade of rubber, standardized as to quality and price, it would be better than the present heterogeneous jumble of grades. That, however, is not likely to come to pass.

The change in grades that will occur will be the gradual disappearance from the market of the resinous, dirty, cheap rubbers. The high grades of wild rubber, together with plantation rubber, will possess the market. There will come also a new nomenclature, and the somewhat picturesque names that now exist, that are arbitrary and non-descriptive, will be superseded by names that are not only descripive but that are a warrant of quality. Until some general super-excellent rubber is produced in such quantities that it dominates the market, it would be of great assistance to manufacturers if large producers of plantation rubber would adopt brands and protect them as trade marks. And even then there is bound to be imitation, with the intent to deceive. For example, if Highlands and Lowlands were grades eagerly sought by the manufacturers, some imitator is sure to brand his rubber "Hi Lands" and "Lo Lands."

That the rubber manufacturers desire clean rubber cannot be for a moment doubted. The fact that they have in the past been forced to install great washing plants to remove bark, sand and a variety of deleterious substances, and that they still use such machinery, does not argue that they would not be glad to receive all kinds of rubber so clean that factory washing would be superfluous. The cost of washing has in the past added at least ½ cent a pound to the price of the rubber used by them. Taking all wild rubber, including bastard gums, at 200,000,000 pounds, the cost to them would be $1,000,000 annually. Then there is the shrinkage from moisture and dirt, much of the cost of which often falls upon the manufacturer. Beyond this is the freight charge on the water and dirt, which, at the high rates that have heretofore obtained from the African and Amazonian sources of supply, is a great annual loss to the rubber trade. The trade would, therefore, welcome the abatement of these unnecessary charges, an abatement that plantation rubber has already begun to put in force.

The shrinkage of wild rubber has been and still is a burden, a reminder of industrial slovenliness and unthrift. It has profited, temporarily only, the rubber gatherer and rubber seller. In the long run it has proved costly—to the rubber manufacturer most of all. The first cost to the manufacturer is in the purchase for rubber that which is not rubber. The second cost, the most serious, is the presence of bits of deleterious material which the washing does not wholly remove and which in the finished goods often produce flaws that render them unmarketable. Thus a sliver of wood bedded in a sheet of rubber may pass through washers, mixers, calenders, vulcanizers and be just under the surface in a finished rubber coat. Then, when in use, it breaks through the surface, opening an ugly scar, and the coat is returned, a total loss to the maker. So, too, with grains of sand that finally show in a pitted, porous surface.

They, therefore, want a better rubber than has yet been produced. Today the best rubber in the world is Upriver fine. It is, at its best, a splendid rubber. Little by little plantation *Hevea* is approaching it in excellence. If there is anything in selection, in the application of science to rubber problems, plantation rubber should not only equal Upriver fine in every respect but should eventually so far surpass it as to establish a new standard of excellence.

Rubber producers, particularly from cultivated trees, are ever striving to put on the market gum that is as light colored as may be. Indeed successful efforts have been made to secure a product that is almost white. As the great majority of finished rubber goods are black—the result of sulphur mixing and vulcanization by heat—color or lack of it is of very little interest to rubber manufacturers. A jet black, clean, nervy rubber will command just as good a price as a straw colored or a white rubber.

Of the hundreds of rubber manufacturers in the world only a small percentage are financially interested in rubber plantations. Their attitude is that the production of finished rubber goods is enough to engross their energies and capital. They are perfectly satisfied to leave the production of the crude material to those who specialize in it.

In the process of manufacture, rubber is first washed, then dried and then massed—the last to render it homogeneous and ready to take up the sulphur, metallic oxides and the like that go to make up the compound. Plantation rubber will eventually render washing and drying unnecessary, for clean, dry rubber will be produced. It is possible, too, that so homogeneous a product will be evolved that massing will also be unnecessary. The last word upon ideal coagulation has not by any means been said. How latex is coagulated—whether by acetic acid or smoke—does not interest the user of the rubber. His interest lies in the cleanliness, nerve and uniformity of the product.

That plantation rubber will evolve a variety of new grades for a time is probable. It is also likely that varying methods of compounding and vulcanizing on the part of manufacturers—all of whom have their own processes—will serve to bring out many qualities in special grades that may be of more or less general importance. But that certain grades of plantation rubbers will always continue to be selected, some for

rubber cements, others for hard rubber, still others for insulation, and so on, is hardly likely. The general qualities called for are resilience, impermeability and toughness. For example: In motor tires impermeability and toughness are necessary; in clothing, impermeability and plasticity; in wire covering, the same; but in rubber thread, elastic bands and goods of that type, elasticity is also required. An extremely resilient crude rubber is just as adaptable for goods that call for only plasticity and impermeability, and some time in the future such a standard high grade will be evolved and used for all of the varied lines that now comprise rubber manufacture.

Efforts to corner rubber, such as that attempted by Vianna in 1882 and others a few years later, are not viewed by rubber manufacturers with the slightest degree of tolerance. They have in the past, fortunately, resulted in failure on the part of the speculators and, as a whole, meant loss to the rubber trade. So, too, fluctuations in price, whether from speculative or natural cause, have proved a distinct handicap. If crude rubber be very high manufacturers find it difficult to get increased prices for their goods. Many articles in rubber if too high priced are displaced by others that contain no rubber. For example, leather belting takes the place of rubber belting, twine is used instead of elastic bands, etc., etc. In the event of a sudden drop in price of crude rubber, orders placed by wholesale dealers are cancelled and new orders placed at a lower price with other manufacturers. Hence, corners and fluctuations in price are feared by the rubber manufacturing trade at large, and are a serious drawback to a regular and healthy growth.

That rubber manufacturers will view possible efforts of rubber planters to curtail production and thus maintain high prices with favor can be denied. Such action may keep prices up for a time, but it will inevitably stimulate outside planting in all parts of the tropical world. It will also be a distinct advantage to those who have partially established plantations in localities not blessed with cheap labor. Further than this, it will be a constant incentive to those distinguished and scholarly German chemists who are step by step advancing toward the commercial production of synthetic rubber.

The rubber manufacturer produces his quota of goods whether the price of Fine Para be $1 or $3 a pound. Really what most concerns him is that the price be the same to all and that violent fluctuations in price be done away with.

For a product so valuable, india rubber has suffered from careless and inadequate packing more than any other commodity. In the past, rubber worth anywhere from $1 to $2 a pound, and even more, has been sent thousands of miles in rough boxes, in fragile crates, in burlap bags. It has been stored where it came in contact with water, oil, heated air and dirt in infinite variety. So loosely packed was it and so carelessly guarded that its theft was of daily occurrence. An urgent necessity, therefore, is some form of packing that shall at once be secure, cleanly and economical.

In considering this, however, there comes the important question of the physical shape of the rubber to be packed. Shall it be in the form of balls or pelles, sheets, slabs, sausages or what? Wild rubber has come in all of these shapes, and more. Is there any reason for accepting any one of these forms as embodying the best ideas? They all have their advocates, but they are without exception those who gather it in the jungle and who find it most convenient to make the shapes in which they send their rubber.

The pelle is not capable of being packed without waste. It holds moisture a long time and it must be soaked in hot water and cut open before the machines can handle it. Small balls and sausages gather much dirt, leave much of their surface open to oxidization and are easily stolen. Sheets like the crepe of commerce have all to be pulled apart before use, and a pound or two torn from one end is not missed. It would seem, therefore, that some form having always standard dimensions, and branded with the name of the plantation, would be a step in advance. Rubber in such form would be hard to steal, or hard to dispose of when stolen, would pack without waste of space and would be exceedingly easy to handle in weighing. As for the wooden boxes, planed boards should be always used. Of course the ideal shipping package would be one built of material produced near the plantation, something that could be used or sold after it was emptied. That, however, is yet to be evolved.

The theft of rubber is common. In the past, rubber gatherers, importers and manufacturers have all been sufferers. On the part of manufacturers many attempts have been made to bring the thieves to justice, but the difficulty in establishing title to pelles and chunks that are hardly distinguishable one from the other has usually resulted in failure. With uniform shape, plantation brands, adequate packing and direct shipment from plantation to factory, most of this thieving would be impossible, or at least easily detected. Once in the factory, the manufacturer is able to guard his rubber pretty safely. There is a movement, inaugurated by the Rubber Club of America, to destroy the market for stolen rubber by invoking the assistance of manufacturers and the wholesale handlers of rubber waste. These firms not only refuse to handle lots of rubber offered by those who cannot show a clear title to the goods, but they also report any such offerings to the Rubber Club. Such procedure will in time, no doubt, reduce rubber stealing to a minimum. Perhaps it is the rubber planter who will in the next decade suffer most from rubber thieves. Certain it is that if once the thrifty peasants of the Middle East ever establish every man his own little plantation of *Hevea*, some of his richer neighbors' rubber will be likely to swell the product of his own trees.

The middle man, the importer, has in the past played a very important part in crude rubber. He has provided capital for many factories and financed aviadors and producers the world over. His operations have been large and his profits commensurate. As in other lines, it is probable that he will always have a place. With the growth of the plantation industry, the standardization of grades and the close relations between producer and user, his activities, however, are likely to be lessened. Rubber importing as a definite commission business will take the place of speculative importing, juggling of grades and creation of new types from ingenious rearrangement of old. Nor is it likely that rubber manufacturers will long continue to pay commissions to those who receive rubber simply to re-pack and re-ship it to them. Still further they will view with distinct relief the abandonment of the ancient storage vaults that reek with moisture.

A simple form of contract that will be universal and fair to both buyer and seller is something that the majority of rubber manufacturers most earnestly desire. In the past there have been a variety of contracts that were sometimes binding and sometimes not. There have not been wanting instances when importers sold for forward delivery at a price, and if the market went down rushed deliveries ahead of time and in increased amounts, or when it went up delayed deliveries for months, substituted poorer sorts to gain time or refused to fill orders at all. On the other hand, there have been times when manufacturers buying at high prices, and experiencing a falling of prices, refused to take the rubber contracted for. Of course, a steady market price, which plantation rubber will in time effect, will do away with such temptation to a degree; and a uniform, clear contract will do the rest.

Speaking of the attitude of American rubber manufacturers toward plantation rubber, they are very friendly, but at the same time are constantly provoked by the mixed shipments

and the unreliable naming of grades. It would be possible to fill pages with protests, and just ones. A sample from one of the large and alert manufacturers will suffice.

"The ridiculousness of the present method of grading this rubber is a thing that I cannot understand. Of a five-ton delivery of so-called First Latex from ——— to this company there were seven distinct varieties, all the way from the finest thin pale crêpe up to heavy amber gristly sheet ½ inch thick. Apparently all this is decided by some wise man in the warehouse in London, who decides that this or that grade is or is not this or some other grade. All of which, in this enlightened age of scientific management and laboratories, strikes me as being a little more than particularly 'asinine.'"

Another point that is emphasized is the lack of nerve in some of the best looking rubber, said to be due to too much milling. Rubber manufacturers all know that the best crude rubber loses its nerve if massed too much. It is therefore presumed that too much milling in the plantation factory will bring about the same result.

RUBBER SHOE VARNISH.

By a Veteran Rubber Shoe Mill Superintendent.

THE first recipe for rubber shoe varnish came into my possession fifty years ago. It was called the "Isaac Williams Varnish." It read: Boil oil till it becomes thick as molasses, add 14 ounces of sulphur to one gallon of oil and one and one half gallons of camphene. Here is another recipe from my book of that date: Two gallons oil, one pound sulphur, one ounce sugar lead and benzine.

From the same book came the following recipes for preparing coal tar: One gallon coal tar, 4 pounds sulphur, 4 pounds rosin; melt and mix. Another is: No. 1—10 gallons tar, 40 pounds sulphur; mix. No. 2—100 pounds rosin, melt and add 15 gallons benzine. To No. 1 add 4½ gallons of No. 2.

Forty years ago some one showed me a small sample of what was said to be Russian varnish, and said if I could make varnish like it my fortune was made. A few years ago I was shown by a man who had worked in the Russian factory the way *he said* it was made; and while it differs in the compound, the varnish does not vary much from American varnish. Their way of vulcanizing, in which the shoe is taken from the heater in a tacky state, and allowed to dry one week before packing, is the secret.

A man named Story went from this country some 50 years ago and had much to do with starting the Liverpool Rubber Co., Liverpool, England, the North British Rubber Co., Edinburgh, and the Russian-American Co., Petrograd. Charles Hotchkiss was also with the Hutchinson Etablissement in France at the same time, and they probably used the same formulas in every factory.

For many years Charles Ensign, who came to the Goodyear Metallic Rubber Shoe Co. about 1859, and was superintendent until the fall of 1881, was the recognized authority on making varnish. Whether he improved the recipe that came to him I cannot say, but his formula was used by most American firms a few years ago. The following oils are used: Calcutta, Baltic, blown oil, Craig and Rose thick oil, and common linseed oil. The boiling varies as to time from 8 hours to 300 or more. I made varnish 4 years without boiling the oil. This takes longer but makes a more elastic varnish. The compounds used do not vary much from oil, sulphur and rosin, but I have found the following all used: Lime, shellac, gilsouite, sugar of lead, litharge, white lead and small quantities of commercial varnish.

Putting the compound into the kettle so that it comes in contact with the bottom is wrong; the proper way is to suspend it 3 or 4 inches from the bottom. When thinning use one gallon turpentine first, before putting in naphtha. This improves the varnish.

One way of making varnish is to keep out 3 gallons of oil, using only 7 gallons, and when the varnish rises toward the top of the kettle, add the 3 gallons of oil, which will cause it to settle. Then take from fire. Another way is to use a steam jacket kettle, putting in oil and compounds, and covering with turpentine. Still another is to take lime and rosin, melt and mix, cool and make into fine powder, after which add sulphur. The oil is made thick for this varnish. Another method calls for the use of blown oil. The rule is, the thicker the oil the less sulphur.

Different factories run different heats, from 5 to 11 hours, and varnish is made to suit. In many places a dryer is used, made by a well known varnish firm. In fact many use this varnish and dryer entirely. Most heaters are run to suit varnish rather than stock, and until heaters are constructed on right lines shoes in different parts of the heater will vary. The surface of upper stock has much to do with the appearance of varnish. If surface is hard it will crack and crawl. For some years I made up stock with billiard and thread scrap instead of new Pará, and the varnish seemed to have a firmer hold and to be less liable to crack.

For several years I made it a point to have samples of upper and soling of different grades of the day's running varnished and put in two sections of the heater every night. Next morning I tried the tensile strength, noted the adhesion of varnish, etc., also had small discs of same stock made under pressure. The specific gravity of these discs was taken every day and record kept, and once a week specific gravity was taken of all stock used in shoes. All stocks were run by weight, not by gage.

Many heaters are run as to time by taking out shoes and testing them when it is thought they are about vulcanized. This reminds me of a heater man 40 years ago. When the steam dry heater was put in place of the pot heater, this man ran it on same lines, taking strips of each kind of stock that was in the heater, which he hung inside about a foot from the small door. After the heat had been running some time he would take them out and test with thumb nail until he thought they were properly vulcanized; and while in charge of the heater he never used a thermometer as his sight was failing and he could not see it.

OPPORTUNITIES FOR MOTOR VEHICLES IN RUSSIA.

Practically all the automobiles, motor trucks and motorcycles in Russia having been requisitioned for military purposes, Consul F. Willoughby Smith, of Batum, calls attention to this fact, adding that the country will be obliged to readjust its centers of distribution and channels of trade, while seeking new sources from which to draw supplies. As soon as the danger of further requisitions has passed, there will necessarily be a great demand for all descriptions of motor vehicles, which are largely used in the oil fields and mines, as well as on farms and in manufacturing enterprises.

TIRES IN NETHERLAND EAST INDIES.

The principal automobile tires represented in Java at the close of 1913 included: American tires made by the Goodrich Tire Co.; British tires, made by the Dunlop Tire Co.; Michelin tires, made in France; the German Continental tire and the Prowodnik tire, made in Russia. East Java is the location of the Goodrich agency in that market. In 1913 the total imports into Dutch East India included tires for automobiles to the value of $590,000 and for bicycles to the value of $180,250; the American tires representing $8,000 and $720.

AMERICAN RUBBER SHOES IN SYRIA.

An American consul is authority for the statement that some years ago a considerable quantity of American rubber shoes was sold in Damascus, but the dealers ruined the trade by only bringing in the cheaper grades. All the rubber shoes worn in that section have in consequence been brought of late from Russia.

A Remarkable Salvage Operation Which Rubber Made Possible.

By Robert G. Skerrett.

THE submarine diver is able to follow his calling and to do the things that amaze, at times, mainly because of the vitally necessary part that india rubber plays in his equipment. There are about 400 commercial divers in the United States, but all of these men are not equal to really deep submergences, and the man that can go down 150 feet and there do good work is the exception rather than the rule. But aside from these men there are other under-water workers

GROUP OF MASTER DIVERS.

of whom the public hears but little. These are the qualified divers in the navy, who are officially known as seamen gunners.

The seaman gunner is the all-around handy man or enlisted specialist of the battle fleet, and part of his comprehensive training is submarine diving. When he dons his diving dress he generally goes overboard to look for a lost torpedo, a stray anchor, or to examine the bottom of the ship on which he is serving. For this work the sailorman is not required to go to any considerable depth, therefore he qualifies at the training school at Newport by proving his fitness to operate at but 60 feet below the surface. Every fighting ship in the United States navy has a number of these men aboard, being in this respect like the battle craft of the British navy. The story we have to tell is how some divers of the English navy, from the cruiser "Essex," with other of their citizen fellows from Canada and the United States, recently completed an exceedingly hazardous under-water task in connection with the sunken steamer "Empress of Ireland."

The reason the British naval divers took so important a part in this work was because the admiralty set the pace a few years ago in certain revolutionary experiments which showed how men properly trained and suitably equipped could descend to a depth of 200 feet and assist there in the recovery of sunken property. Prior to that, a good many divers had lost their lives by submergences at lesser depths, and among these were seamen in the royal navy. The medical men and physicists engaged in that investigation found out how the "bends," paralysis and sacrifices of life could be avoided while actually increasing the operative zone of the under-water worker. Following upon these disclosures some important improvements have been made in the elastic diving dress as well as in the armored rubber air hose and the hand pumps employed in furnishing an ample supply of air to the diver at a suitable pressure—the latter always regulated by the distance below the surface of the water.

Before going into the details of the salvage of the "Empress of Ireland," a few paragraphs may properly be inserted here descriptive of the diver's equipment, to show how necessary a part of this equipment rubber constitutes.

A modern diving dress consists essentially of two parts—the bronze helmet and collar or corselet and the elastic body-covering, which is secured to it, extending from the shoulders to the feet. In dressing, the diver gets into his one-piece waterproof garment through the opening at the shoulders or neck, and this section of his dress is akin to one type of nightdrawers for children. The only openings are at the neck and the cuffs, the feet being covered by an integral part of the dress. It is in this portion of the so-called submarine armor that rubber plays so conspicuous a part. This garment of the diver is made of solid sheet india rubber, between two layers of tanned twill. It has an inner and an outer collar, the inner one (sometimes called the "bib") of the same material as that of the dress, to pull up round the neck, and the outer one, of india rubber, to go over the breast plate or corselet to form a water-tight joint. The cuffs are also of rubber and fit tightly round the wrists, making, when secured by the rubber rings, a water-tight joint, at the same time leaving the diver's hands free.

The rings for the wrists go over the rubber cuffs, and two or more of them may be required, depending upon the conditions under which the man is working. Now, of course, a

PAIR OF DIVERS AT WORK.

diver could not work without air being sent down to him from the surface, and armored rubber hose is the means by which this vital current is forced down to him through the agency of suitable pumps or tanks charged with a supply of compressed air. As has been said by one of the world's largest manufacturers of diving equipment: "It is of the utmost importance that the diver's air pipe should be of the strongest and best description, and we do not hesitate to assert from our long experience that hose of less than 5-ply should never be used for deep-water work. Our hose is made from the best possible materials, and before it is allowed to leave our works every length is tested to a pressure of 300 pounds per

square inch and must show no sign of increase of diameter whilst under that pressure. All our hose is armored by a spiral support of tinned steel wire embedded in the texture."

The helmet is screwed down upon the corselet and made tight by a rubber gasket, and the face plate is sealed in the same fashion by a suitable ring of rubber. Of course this does not cover what might be called the additional features of a diver's costume, which include stout leather boots, with wooden soles, to which are riveted lead soles; leaden weights upon his back and chest to carry him to the bottom notwithstanding the air inside of his suit; the telephone equipment inside of his helmet; his lifeline, which has in its core the telephone circuit; the india rubber mittens which he may have to wear when the water is very cold; his submarine lamp; shoulder pad to take the pressure of the heavy metal head dress, and the belt and sheath in which the under-water worker carries his knife and possibly additional lead weights to hold him more firmly upon the bottom against the sweep of a strong current.

Should a diver fall so that his body be prone or his head lower than his waist, there is danger that the air may flow from the helmet into the elastic dress and inflate it. In deep water the rubber suiting is pressed very snugly against the diver's body by the surrounding water and very little air remains there. When he loses his balance, however, this state of affairs might be changed, to his peril, his suit become distended, and the diver floated hastily surfaceward, with the possible chance of the dress bursting and the man being drowned or otherwise menaced by the sudden lessening of the water pressure on his way upward. Therefore, the very latest improvement in diving dresses is one that permits the lacing up of the legs so that the suit is held always close to the body and cannot be filled with buoyant air even though the diver fall. This gives him much greater freedom of action. He can bend over or stoop, or even crawl along the bottom, if his work require, and he need not fear the inflating and dangerous expansion of his covering.

It would be hard to tell just how many submarine divers there are in other parts of the world, but their employment is very extensive. In the northern waters of Europe their services are principally for salvage operations and subaqueous engineering tasks; and these demands are many. In the Mediterranean and in the warm waters of the Southern Pacific and the Indian Ocean, sponge gatherers and pearl hunters use diving suits such as we have described, in great numbers, and the Japanese shell hunters in their native waters and in southern California do the same thing. Therefore, it may be reasonably declared that thousands of submarine diving suits are in use, and the manufacturing industry is a large and very profitable one. This is particularly so in England and Germany.

A diving suit, like any other character of dress, has a long or short life, depending upon the nature of the jobs. The average dress is good for two or three years if carefully handled and the demands are not rugged. However, the elastic part of the suit may survive only a few days' or a few hours' stress. In cutting the big hole through the hull of the "Empress of Ireland," described later, the long spiral steel shavings that were made by the drills were particularly harmful to the rubber-canvas legs of the suits and, despite the use of protecting knee-pads, the tough fabric of rubber and oak-tanned twill was soon pierced. Of course these holes can be patched, but no experienced diver wants to use the dress again for his deeper submergences.

As most of us know, the "Empress of Ireland" was damaged by collision with another ship and went to the bottom near the mouth of the St. Lawrence river. At that point the river rises and falls at each tide to a normal measure of 16 feet, but under some conditions this change of depth is even greater. As a result, the currents are very swift when the tide is either ebbing or on the flood, and at each change of tide there is a brief period, of only about thirty minutes, called the "slack," when the waters are substantially currentless or still. Salvage operations could be carried on only for these short periods, and even then the state of the weather determined whether or not work could be done at all below the surface. But there were other circumstances that hampered. The river at the point of the catastrophe is very deep; the waters near the bottom are muddy and well-nigh inky black, while the temperature was as low as 40 degrees Fahrenheit. These conditions made the divers' tasks not only difficult but extremely dangerous. However, india rubber, combined with engineering cunning, won out just the same.

When the "Empress of Ireland" went to the bottom after

DRYING THE DIVER'S DRESS.

her collision with the "Storstad," she heeled over and rested on her wounded side. There was nothing above the surface to indicate how the ship lay in relation to the course of the river, nor, indeed, anything to show exactly where she rested. The initial task of the Canadian Salvage Association was to find out just where the ship was, and her exact posture. This was not easy. The diver who first went down just managed to catch a projection on the craft's upturned bilge, and then, losing his hold, dropped to nearly 130 feet, where he hung without being able to touch anything. The red paint which discolored his suit told that he had touched the ship's bottom, and his description of the projection to which he had clung revealed its identity as one of the bilge keels. That, however, was only one point of contact, and the next time the diver went down he landed on the hull, just inside of the rail. After that, successive descents enabled the salvors to make certain of the vessel's position.

The Canadian government wished to secure the mail matter; certain underwriters wanted to get the silver bullion and specie, and the liner's owners, the Canadian Pacific Railway, were especially anxious to recover the bodies of the

TWO DIVING OUTFITS, WITH CABLES, HOSE, ETC.

passengers. The postal pouches, the treasure and most of the bodies were inside of the ill-fated steamer. It is an extremely hazardous thing to enter a sunken ship, especially if she is in deep and dark waters, but the problem was made still harder before the salvors could begin. The cargo shifted, and this tended to bring the ship back towards an upright position, but still left her heeled over at a sharp angle, while the soft mud of the river bottom yielded and the liner sank deeply into it.

The diagram accompanying this article shows the path the divers took in reaching the ship's interior. The steerage was on the same deck with the mail room and strong room —the latter containing the bullion and the purser's safe. It was out of the question to reach the strong room by any of the regular hatchways or other hull openings, but the salvors found another route available, provided the side-plating of the ship could be cut through at a certain point—that point having no outward mark other than that of an air port, and that air port merely one among scores of others. To find this particular air port it was necessary for the divers to work from both ends toward the center and to count carefully each glazed opening until they had identified the desired deadlight. This was a difficult job, because they had to keep their footing on the slippery slanting side of the liner. Finally, after some days of groping, they reached their goal. They got into the sunken vessel by the hole which they cut at a point where the internal arrangement of the craft made it fairly easy to reach the liner's strong room. The opening was made by drilling a lot of holes with a pneumatic tool fed with compressed air through an armored rubber hose reaching to the surface, and despite the fact that the divers had an awkward place to stand on the slanting side of the vessel, still the drill did its work so well that the passage was cut nearly as quickly down in that inky depth as could ordinarily be done in the open air. Of course they did not do this blindly, having submarine lamps to help them. From the first, the question of lights in that perilous work was one of great importance, but it was particularly desirable that the electric lamp should not require a cable which might get tangled. An electric hand lamp was adopted, but it was necessary to adapt it for the special conditions. Accordingly, the lamp was made water-tight by a piece of motorcycle tire, closed at one end by rubber cement and slipped over the lamp. The end not sealed hugged the glass, and with the aid of some rubber tape a tight joint was made which kept out the water without interfering with the illumination. At their greatest depth, i. e., in the strong room, the divers worked 160 feet below the surface, and yet the lamps were quite equal to the hydrostatic pressure encountered.

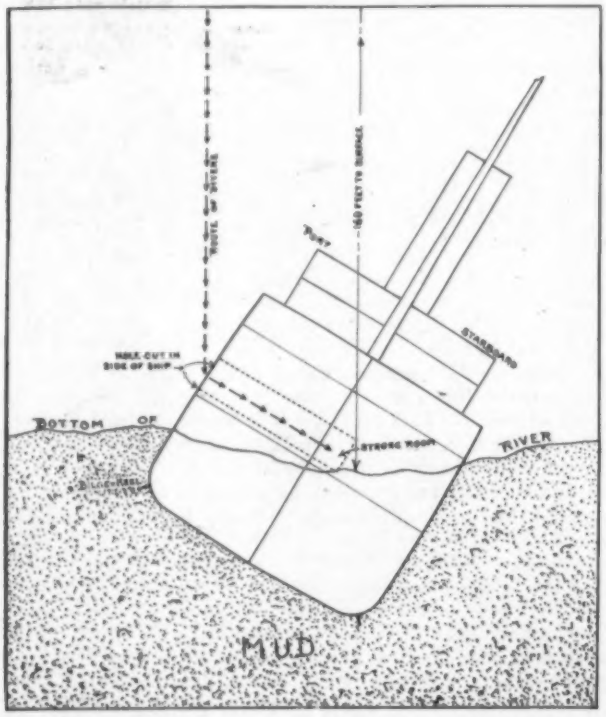
But before the men were allowed to go inside of the ship to salve the treasure and to recover the mail pouches, the flanking doorways to the six staterooms were sealed and the lengthwise passage blocked off by two bulkheads in order to give a straighter route and one freed, to just that extent, of pitfalls into which the divers might turn should they become confused. Another precaution was taken to guard against accidents:—The chief engineer had made a pasteboard model of the immediate path to the room holding the bullion and the adjoining compartment containing the mail matter, and the divers were drilled with this miniature until they could describe with their eyes shut just which way they would have to turn in order to get out of the vessel should their lights fail them at any point.

Because of the coldness of the water the divers were soon incapacitated by their hands becoming numb. Ordinarily the hands are the only parts of an under-water worker that are not covered, and the reason for this is that the diver depends largely upon his sense of touch to guide him where he can not see. It was plain that something would have to be done, and Yankee inventiveness suggested rubber gloves. The English seamen divers and the Canadians objected at first, but finally thin but durable American rubber gloves were found and these, while protecting their hands, did not interfere with a nice sense of touch. The importance of the part played by these coverings can be gathered from the fact that the twelve expert divers engaged used up quite a hundred pairs before their services were ended.

Owing to the hazardous nature of the work the divers always descended in pairs, so that one could help the other in case of need and both could use their united efforts the better. To further facilitate their joint labors a very recent development of a submarine telephone system was employed, and this was somewhat improved by modifications suggested by one of the American engineers. Usually divers communicate with the surface by means of signals in the form of pulls upon the connecting lifeline or by tapping so many times on the helmet of a companion worker. This code is limited. It was vitally necessary that the men should be able to communicate vocally with one another so that their efforts would tell most with the least physical stress, for in very deep submergences a man can really do but little muscular work. Therefore each diver had a telephone circuit reaching to a central station on the surface salvage vessel, and the attendant there could relay at once a message from one to the other of the divers or could send them orders or give appropriate directions to assistants on the boat handling some part of the co-operating outfit, such as a hoisting engine, an air pump, etc. This telephone system—and we know the part that rubber must have played in its get-up—was one of the most useful features of the salvage plant.

One of the things discovered by the Admiralty investigators was that the prevailing hand pumps did not furnish enough air to the diver when working at depths of 130 feet and more. The manufacturers set about improving the pumps, but the salvors soon found the burden an extremely heavy one when trying to send air enough down to the six divers working on the sunken vessel. It took four men to crank each pump and but a short time was needful to exhaust them, and four more fresh men had to be ready to take up the grinding job in order that there should be no halt in the air supply. A break-down, even though brief, might prove fatal to the divers below; and here, again, American ingenuity filled the breach.

Our own naval authorities had made some experiments, and they found that compressed air could be stowed in tanks and thence fed directly to the submerged workers toiling at best in water of moderate depths. The problem for the salvage engineers in the present instance was to amplify this and to make it equal to the demands of several divers operating between 140 and 160 feet below the surface of the tide. Therefore, on the schooner "Marie Josephine," the salvors' floating base, two big air tanks were installed, and then steam-driven compressors, instead of hand-propelled pumps, were utilized to store the air in sufficient measure to meet liberally every condition with a generous surplus. The armored rubber air hose was attached to these tanks with suitable intervening valves which could be manipulated to feed the air to the divers at just the pressures indicated by suitably sensitive gages. One man at a valve with two outlets sufficed to attend a couple of divers, and this not only simplified operations, but added greatly to the security of the men.



POSITION OF "EMPRESS OF IRELAND" AND ROUTE BY WHICH DIVERS ENTERED HULL.

The removal of the mail pouches was not a particularly troublesome work, and the recovery of the bars of silver bullion was only a little bit harder, because each ingot was handled separately and was dragged out of the strong hold by means of a hoist rigged on the attending surface vessel. A canvas bag with a framework of bar steel was fashioned, and a hole in the bottom of this bag permitted the water to escape freely. One by one the ingots were placed in this receptacle and guided by the divers out of the strong room and thence through the two succeeding doorways into the straight passage leading outward to the hole cut in the vessel's side. The pull on the connecting line was nicely regulated by telephone directions dispatched by the divers. The really serious undertaking was that involved in getting out the purser's safe, which had been set into a special niche built for it in the corner of the strong room. The divers had to dislodge this strong box by means of crowbars and then to pass around it a chain sling to which was attached a small but strong wire rope. This line was then led carefully around pulleys at each sharp turn and provision was made for securing or "stopping" the cable at frequent intervals as the safe was steered along its round-about path and over and up the sharply slanting and slippery deck of the steamer. It was needful that the pull exerted by the hoisting engine should be uniform, lest a sudden jerk part the wire rope and endanger the lives of the divers piloting the safe. If that cable had snapped and cut the rubber suit of either of the men it would probably have meant certain death, while to have been caught or squeezed by the runaway safe would have proved equally disastrous. None of these mishaps occurred, thanks to the exhaustive preparations made and the thoroughness and the skill with which every manoeuvre was carried out."

In kindred undertakings at lesser depths the practice has been to blast away the ship's structure intervening between the free water and the objective—this, assuming that the water be clear enough for light to come down from the sun. In the present case the depths of the St. Lawrence were very dark, and to have blasted the steel work would have produced shattered plates and tangled frames that would all too easily have either caught or cut the air hose and the divers' life-lines. So, too, explosions of this sort might have desecrated the bodies of imprisoned passengers. Therefore, the salvors set for themselves a harder task, a finer job of under-water engineering; but, thanks to these preparations, they accomplished all that they set out to do. Not only were the safe, the bullion and the mail pouches salved, but 170-odd bodies were recovered.

These salvage operations on the sunken "Empress of Ireland" stand without a parallel in the art of under-water work, and but for the agency of india rubber in its various applications this masterly achievement would have been out of the question.

THE RUBBER GROWERS' ASSOCIATION AND THE WAR.

The Council of the Rubber Growers' Association, of London, has approved a proposal to raise funds through the membership of the association for the purpose of presenting to the War Department a motor ambulance for the use, preferentially, of the Indian Expeditionary Force; such an offer having been made and gratefully accepted. A committee was appointed to carry out the necessary details, composed of—John McEwan, president of the association; A. Bethune and H. K. Rutherford, former presidents; Sir John Anderson, head of the firm of Guthrie & Co., of Singapore; T. Cuthbertson, the Honorable Everard Fielding, E. L. Hamilton, John A. Roberts and W. Shakespeare. If sufficient donations are received it is proposed to maintain a chauffeur for the car and to provide running expenses.

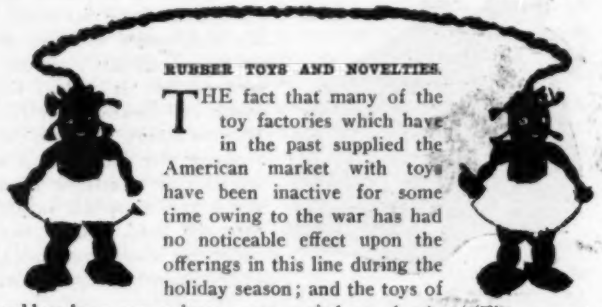
It is proposed also, out of the suggested funds, to present to the war ship "Sydney" of the Australian navy, a life saving collar made from plantation rubber for each member of the personnel of that ship, in recognition of her service to British commerce in destroying the German cruiser "Emden."

A BRITISH FIRM IN THE MARKET FOR EBONITE OR VULCANITE.

Kemp's Vulcanizing Co., Limited, of 19 Hardman street, Manchester, England, is desirous of securing supplies of ebonite or vulcanite goods, which in the past they have purchased in large quantities from Germany, and would be glad to get in touch with American manufacturers of this class of goods.

It is to be noted that many American rubber manufacturers who had adopted plantation rubber in certain special compounds are turning to coarse Para, Ceara and Centrals. They took to the plantation slowly, and will doubtless go back to it with equal slowness.

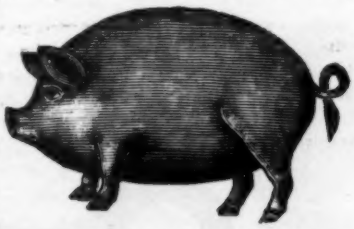
New Rubber Goods in the Market.



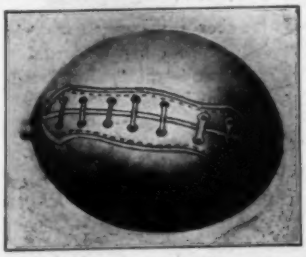
RUBBER TOYS AND NOVELTIES.

THE fact that many of the toy factories which have in the past supplied the American market with toys have been inactive for some time owing to the war has had no noticeable effect upon the offerings in this line during the holiday season; and the toys of rubber have never been more varied or pleasing. The present situation in this line is one of wonderful opportunities for the toy manufacturer, buyers being not only willing but extremely anxious to examine samples produced here to replace similar lines that they are unlikely to be able to secure from abroad for some time to come.

Red rubber animals, rattles and dolls in all the accustomed styles have been sold in quantities, some enterprising retailers filling baskets with these rubber toys and selling them at prices up to $8 per basket. The little rubber Kewpie has been extremely popular. The up-to-the-minute doll, however, is the doll that dances, and the above illustration shows a pair of dusky damsels who, beside being expert in the execution of buck and wing dances, can also be induced to give exhibitions of the fox trot and other late bewildering combinations of movements. The dolls are twins, attached by an elastic cord encased in ribbon, and when dangled over the finger their gyrations and droll expressions are extremely amusing. Another funny little new doll is "Billy Bumper." And he can be bumped around with perfect safety, for he is composed largely of rubber, his body consisting of a rubber ball, his head and feet being made of cotton.



Many new forms of toy balloons have been shown this season. The charm of this form of amusement knows no season, however, and has as strong a hold on grown-ups as on the younger members of the family, for no New Year's Eve celebration is complete without its toy balloon souvenirs. The bagpipe balloon is a favorite for occasions where noise is considered desirable. It has wood mouthpiece and trumpet on which tunes can be played in imitation of the Scotch bagpipes. Another novelty is the dying pig. This balloon when inflated resembles the accompanying illustration, and as the air escapes the pig squeals, until its final collapse. Then there is the balloon made in two colors, for either air or gas, and known as the "Tango" balloon, the crying balloon, the balloon that whistles and the balloon made to resemble a football, including the side lacing effect. Still another style is made torpedo shape, being capable of inflation to a length of 14 inches. This style can be had with stick and pom-pom attachments, or with a string at one end and a pin wheel attached to a cord inserted in the other end, so that when the balloon is drawn through the air the pin wheel revolves. Most of these balloons can be had either with or without self-closing valves.



Torpedoes and airships suggest warfare, and that attacks by the latter craft may be rendered ineffective a new balloon cannon has been devised. This is a model of the Krupp gun designed to fight airships. This military toy is, of course, made of metal, but its ammunition consists of rubber plugs. Coast guns, Howitzers and field artillery consume large quantities of these rubber plugs, rubber projectiles and rubber balls.

The rubber stamp manufacturers have also contributed to the amusement and education of the small members of the family by supplying rubber stamps, sets of which, at 25 cents for 12 stamps, will turn out endless numbers of soldiers and sailors, animals and hunters, wild west and circus performers, Brownies and Teddy bears, quaint and dainty little Kate Greenaways, etc., etc.

The toy departments display so many toys in which rubber cord is used—if to a small extent in individual instances—as to

RUBBER STAMP SOLDIERS AND SAILORS.

make the supply of this article to the toy makers an interesting possibility. For instance, it would be interesting to know the quantity of cord necessary to adjust the arms and legs of a holiday supply of dolls; to equip the aeropianes and other flying craft, which are propelled by rubber cord wound in strands; to suspend the bugs, beetles and other springy-legged figures known

KATE GREENAWAYS.

as Japanese trembling novelties; to serve as joints for the wooden circus toys, animals and clowns, and to propel the torpedoes that destroy bath tub battleships, etc.

Miniature hot water bottles, nursing bottles, etc., have appeared, making an irresistible appeal to young mothers of baby dolls. The rubber hot water bottle is 3 inches long and 1½ inches wide, and is an exact imitation of the ordinary sized article. These novelties and the miniature atomizer with rubber bulb are made under the familiar brand "Alpha." [Parker, Stearns & Co., Brooklyn.]

AYDELOTT'S WATER BANDAGE.

This is really a hot water bottle made in the form of a broad belt. It has a removable cover, made of soft fabric, to which is attached a webbing fastener. It can therefore be worn about

any part of the body and retained as long as necessary. The bandage is also arranged so that with tubing, etc., it becomes a combination water bottle and syringe. [J. R. McCormick, The Xenia Rubber Manufacturing Co., Xenia, Ohio.]

THE "PINNACLE" TANK BULB.

Tank bulbs are today used by the hundred thousand, and poorly constructed ones cause an everlasting lot of trouble. On the other hand, a bulb properly made lasts a long time and acts perfectly. The "Pinnacle" is one of the excellent sort. The upper part of it is made of hard rubber, and is absolutely rigid; the lower part is of soft, slate colored rubber, and is a perfect valve seat. A point in the shape of the bulb is the concave slope, which allows it to come rapidly to the surface when released, thus insuring a flush of the full capacity of the tank. The top and bottom of the bulb are welded together by the perfect lock-grip coupling. [The B. F. Goodrich Co., Akron.]

THE "BESTYETTE" RUBBER APRON.

Rubber aprons in housework and in factories are becoming more and more a necessity; indeed a light weight, white, rubber apron is much more sanitary, cleanly and practical than the calico aprons of a generation ago. Where they are used in factory work they are said to be much more economical than cloth aprons, because they are easily cleaned with soap and water and need no laundering. The illustration shows a modern type called the "Bestyette," made of white rubber sheeting, light and strong, and guaranteed not to crack or peel. [N. Y. Mackintosh Co., Mamaroneck, New York.]

HAY'S HAIR HEALTH APPLIER.

This device is a rubber cup containing a sponge. It is for the purpose of applying liquid hair growers to the scalp. It is made particularly for one special hair grower, but can actually be used for any scalp application. It is really a very cleanly and simple method for scalp massage or for the application of anything excepting animal greases. [Philo Hay Specialties Co., Newark, New Jersey.]

A new filler called "Air-in-Al" is being offered to the trade as a means of eliminating tire punctures by Achile Brile, of 1790 Broadway, New York.

The stores are showing a new waterproof Pullman apron with pockets for toilet utensils, wonderfully convenient in traveling.

WATTERS ICE HELMET.

Ice caps, ice helmets and head coolers of a great variety are manufactured by the druggists' sundry makers the world over. Some are made of pure rubber, some of C. I. rubber, and in a variety of colors. They are, of course, for reducing temperature in cases of fever or sunstroke. The cooling medium is either ice water or cracked ice. The Watters helmet, shown in the accompanying illustration, is a special type, consisting of a double cap which fits snugly over the head, and is tied under the chin with tapes. [The Hospital Supply Co., 53-55 Fifth avenue, New York.]

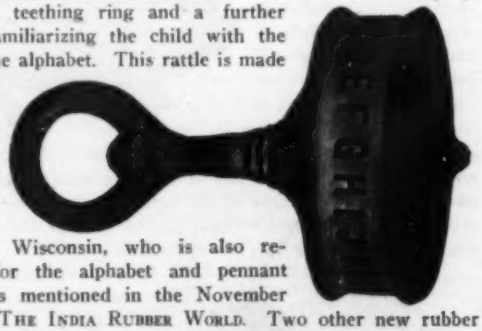
A NEW JAR RING.

The ring in question is not the standard flat ring but round—made to fit a special jar, which has two grooves at its upper end. In sealing the jar the ring is placed in the upper groove, and when the vacuum is created by the shrinkage of the hot contents the rubber ring rolls into the lower groove and the

jar is thoroughly sealed. A point in favor of this type of jar ring is that in prying the cover off the ring is in no way injured—something that is likely to happen with the flat ring. [All-Glass Sanitary Package Co., Pittsburgh.]

RUBBER RATTLE AND TWO NEW RUBBER BALLS

Rattles are a source of great joy to the small child, and here is one combining with its possibilities in this direction the properties of a teething ring and a further value in familiarizing the child with the letters of the alphabet. This rattle is made of white rubber, designed by Mr. Eddy, of the Goodyear Rubber Co., Milwaukee, Wisconsin, who is also responsible for the alphabet and pennant rubber balls mentioned in the November number of THE INDIA RUBBER WORLD. Two other new rubber balls have been brought out by this company—the "Scouto" and the "Campo"—designed by Mr. James Suydam.



THE PACKING WITH THE LIP.

Crandall's Hydraulic Packing, often referred to as the Lip Packing, is fundamentally different from the ordinary packing, as on the inside it is finished at one end with a thin rubber lip which the pressure forces against the rod or plunger, thus making the joint extremely tight. And it works automatically, for the greater the pressure the tighter the packing becomes. (Crandall Packing Co., Palmyra, New York.)

"LEATHEREX."

This is the name of a new and specially prepared sole leather substitute just placed on the market by the Tyer Rubber Co., of Andover, Massachusetts, manufacturers of the famous "Tyrian" rubber articles. This new soling is supplied to the trade in sheets, graded for the most economical cutting, in various colors. Although it is absolutely waterproof, it does not draw the feet. It is claimed for this sole that it will outwear sole leather, while costing less, a claim emphasized by the makers, who also advance the statement that prices will not fluctuate but can be quoted for a long period in advance—in striking contrast to conditions in the sole leather market, where supplies and quotations are alike uncertain.

THE "ALL-WEATHER TREAD."

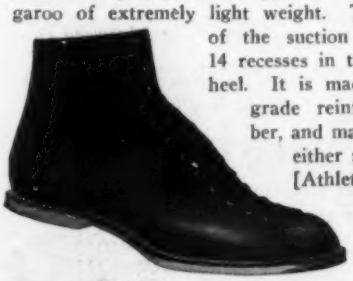
A new style in rubber soles is one for winter shoes shown in the accompanying illustration. In this the middle of the sole surface only has deep corrugations, the part containing the corrugations being ¼ inch in thickness. The shank, however, is only 9/64ths of an inch thick and carries a thin heel, the idea being to add a separate rubber heel to it. The shape of the sole is eminently modern, and it is made in sizes to suit leather shoe manufacturers. [The Goodyear Tire & Rubber Co., Akron.]

CHILD'S RUBBER SOLE.

The mail-order houses of necessity originate and secure many of the best novelties. A child's rubber sole, for example, is the product of such a house. This sole is simply a smooth molded sole with a broad leather tip for both toe and heel. By this combination the foot has a perfect grip whatever the weather, and the values of both leather and rubber combined. [Sears, Roebuck & Co., Chicago.]

RUBBER SOLED BASKET BALL SHOE.

"Whatever the sport, we make the shoe" is the ambitious claim of the makers of this type of sporting shoe. Not only do they think well of their general line, but so well of this shoe that they have patented it. As far as the leather part goes, the upper is made of Kangaroo of extremely light weight. The sole is of the suction type, with 14 recesses in the sole and heel. It is made of high-grade reinforced rubber, and may be had in either red or gray. [Athletic Shoe Co., Chicago.]



THE ARMORTRED SOLE.

This is a new rubber sole, lighter than leather, of good wearing quality, and is not a perspiration inducer. These soles, 3/16 of an inch thick, are now being worn by policemen, motormen and others whose occupation requires a heavy soled shoe that is flexible and comfortable. [The B. & R. Rubber Co., North Brookfield, Massachusetts.]

"DURABLE KOMPO."

Another substitute for the leather sole is the "Durable Kompo." These soles are guaranteed against cracking and becoming spongy, to be uniform in their composition, even wearing, light in weight and resilient. They are made in black, tan, gray and white, and are described by the makers as "the all-season sole that outwears leather." [Plymouth Rubber Co., Canton, Massachusetts.]

THE "BINGO" EGG STAMP.

It is really a very difficult thing to get a rubber stamp that will print on the surface of an egg, and yet egg buyers are, many of them, scrupulous about knowing, at least approximately, when the egg was laid. The "Bingo" egg stamp is a modern dater which is adapted to print legibly and quickly on the surface of any hen's egg. [The J. F. W. Dorman Co., Baltimore.]

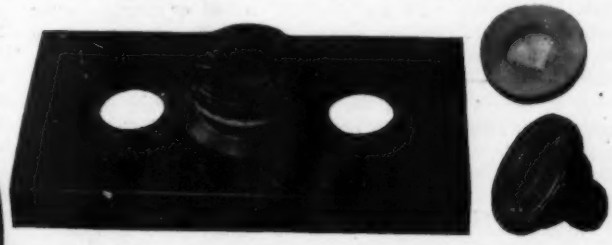
THE BARNETT PUMP PEN.

A great variety of automatic fillers center about hard rubber fountain pens. What appears to be a very simple device is shown in the accompanying illustration. The barrel of the pen and the parts are of standard make, and the variety of ornamentation is also standard—the novelty of the pen lies in the pump operation.

It is very similar to a small piston syringe, and if the piston be tight there is no reason why the barrel should not fill perfectly. There is another advantage, which is that pumping water in and out through the barrel cleanses the pen and barrel effectively. [Ira Barnett, 61-69 Gold street, New York.]

STORAGE BATTERY FILLING PLUG AND HYDROMETER SYRINGE.

The double cover with filling plug of hard rubber and soft rubber gasket shown in the illustration are important parts of an "Exide" cell—the new plug and aperture particularly—as these prevent flooding the cell by controlling the amount of



water needed to replace that lost by evaporation. There is no inner gage or cover to watch while filling—just a neck of liberal diameter closed by a plug. In use one simply removes the plug, fills until the liquid rises in the neck and replaces the plug. This automatically retains the necessary air space for the expansion of the solution when the cell receives a gassing charge.

A very neat instrument for use in connection with sparking batteries is the hydrometer syringe. The parts are a glass barrel, a rubber bulb and a hydrometer terminating in a hard rubber pipette. In use, the bulb is squeezed, the pipette inserted in the vent of the cell to be tested and enough electrolyte drawn into it to float the hydrometer free of the bottom by about ½ inch. The specific gravity reading is then taken from the scale on the glass barrel. [The Electric Storage Battery Co., Philadelphia.]

Dentists are using a jar for sterilizing their instruments. The top is fitted with a rubber ring like the oroinary preserve jar ring. [The S. S. White Dental Co., Philadelphia.]

The Scimatco laboratory tubing is "different from any other rubber tubing on the market." So says the Scientific Materials Co., Pittsburgh.

What the Rubber Chemists Are Doing.

A COMPREHENSIVE SYNTHETIC PATENT.

H. DREYFUS has received British patent No. 17,191 (1914) for a method of producing synthetic rubber, which seems to include almost everything that can be or has been done in that line. The abridgment covers four pages of the "Official Journal," while the ordinary claims require only a short paragraph.

He divides his methods into eight separate parts, as follows:

1:—Olefines, di-olefines and derived products are produced by condensation of two molecules of halogen compounds, with elimination of halogen.

2:—Halogen compounds are transformed by cyanides into butadiene derivatives.

3:—Aldehydes or ketones may act on the halogen derivatives of unsaturated hydrocarbons.

4:—Acetylene is transformed into acetaldehyde by water.

5:—Sodium may act on the halogenides.

6:—Polyhydrox compounds are transformed into furfuranes.

7:—The above are reduced and water eliminated.

8:—Glycerine esters, etc., with at least one double bond—preferably two—are transformed into di-hydroxy derivatives by adding two hydroxyls to double bonds.

The above are converted into caoutchouc-like products by condensing agents, and about everything mentioned in Bernstein is claimed as a condensing agent. The product is to be vulcanized by the usual methods.

A UNITED STATES PATENT USING PONTIANAK.

United States patent No. 1,110,765, issued to J. W. Frank, is for a composition for painting plaster with ponti rubber and resin and Indian copal dissolved in alcohol or acetone, after removing the saponifiable matter with alkali. Attention may be called to the fact that a few years ago Carleton Ellis obtained a pretty comprehensive patent on the use of pontianak resin in cement coatings, the claims being based on the property of pontianak resin to resist the action of alkalies and be unsaponifiable. Attention was called to this property several years ago in this journal in articles describing deresinating processes.

ACETIC ACID FOR COAGULATING PLANTATION LATEX.

Owing to the disarrangement of business the Eastern plantations are now suffering from a scarcity of acetic acid for coagulating latex, and there seems to be considerable discussion as to how supplies are to be obtained.

The Germans have been writing on this subject and state that the world's supply of this acid is known to be produced in Germany and Austria.

It may be mentioned that one-half the supply of acetate of lime from which this acid is made is furnished by the American wood distillers, and that we shipped 80,000,000 pounds of acetate of lime to Europe in 1912, containing about 60 per cent acid. The United States has a number of large chemical companies which make acetic acid of all grades.

It has been calculated that the 50,000,000 pounds of plantation rubber will require 150,000 pounds of acetic acid for coagulating the latex. This would require 250,000 pounds of acetate, worth in New York $5,000; and the acid in the East would be worth probably about $15,000.

The possibility has been suggested of setting up wood distillation works, to be conducted along European lines, with the production of the various by-products, such as alcohol, in addition to the acid.

The Eastern technical journals state that Mr. Campbell, of Colombo, Ceylon, who is attached to the Department of Agriculture, has experimented with a small retort and has distilled some cocoanut shells and produced a few pounds of acid, and Mr. Kelway Bamber, of Peradeniya, has also interested himself in the subject. Acetic acid is said to be manufactured in Colombo on a small scale.

It may be said without fear of contradiction that no complete wood distillation plant could be installed for the production of such a small amount of acid as is required by all the plantations, as the smallest American works would have ten times this capacity.

It is quite possible that the proper solution of this problem would be the installation of a pair of retorts as used in the United States, which would handle about 6,000 pounds of cord wood daily and produce about 3,000 pounds of pyroligneous acid, containing, say, about 6 per cent. acetic acid. This should have all the power of acetic acid as a coagulant, and, in addition, the tarry matters present should have the same preservative effect as in the smoking of Para. In fact this "liquid smoke" should produce "smoked sheet."

The acid would, of course, be dilute as compared with the glacial acetic acid now used, but as it would be produced near the point of consumption the transportation problem would not be very serious.

One thing in connection with acetic acid used for coagulation must be borne in mind, which is that it has been found that some acid contains a small quantity of copper dissolved from the copper condensers, and that this copper makes it unsuited for coagulation, as it produces a slimy coagulation and the product is useless for any purpose.

This means that the final condensation must be made in glass, pottery ware or lead. This would prevent the possibility of copper in the acid. Acetic acid produced from alcohol has also been suggested, but this is merely vinegar and is necessarily quite weak, as ordinary vinegar contains only about 4 per cent. acetic acid.

PROPERTIES OF SOLID DI-ELECTRICS.

Paper presented before the Washington Academy of Sciences, giving results of experiments on the surface resistivity and the volume resistivity of di-electrics.

The volume resistivity is the resistance in ohms between two faces of a centimeter cube.

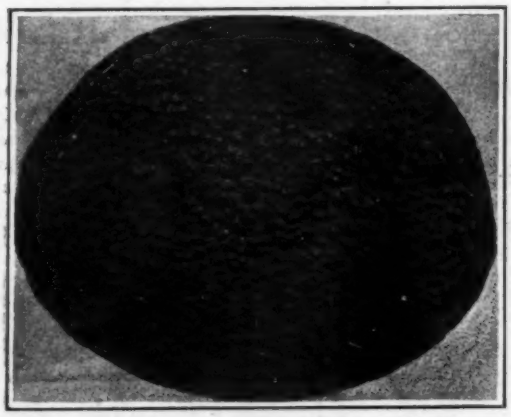
The surface resistivity is the resistance between two opposite edges of a centimeter square of the surface film which is deposited on the material.

The following table gives the volume resistivity of a few of the substances tested:

Special paraffine	over 5,000 x 10.15
Ceresin	over 5,000 x 10.15
Hard rubber	1,000 x 10.15
Clear mica	200 x 10.15
Sulphur	100 x 10.15
G. E., No. 15R	40 x 10.15
Halowax, No. 5,055B	20 x 10.15
Bakelite, No. 558	20 x 10.15
Shellac	10 x 10.15
Sealing wax	8 x 10.15
Moulded mica	1 x 10.15
Unglazed porcelain	300 x 10.12
German glass	50 x 10.12
Platt	20 x 10.12
Opal glass	1 x 10.12
Black condensite	40 x 10.9
White celluloid	20 x 10.9
White gallalith	10 x 10.9
Vermont marble	1 x 10.9
Ivory	300 x 10.6
Slate	100 x 10.6

Caoutchouc Mousse, or rubber foam, described lately in the "Scientific American," is really sponge rubber very much sponged. It is a French invention and is based on the fact of the increase of the solubility of gases with the increase of pressure.

To make it, rubber, softened by massing and partially vulcanized, is enclosed in a steel tube with nitrogen at a pressure of 3,000 to 4,000 atmospheres. The gas dissolves the softened rubber and, when the tube is opened, expands it to four or five times its former volume, when it solidifies. It is said to be of use for a variety of purposes where any very light sponge rubber could be used.



RUBBER FOAM AS IT APPEARS IN THE MICROSCOPE.

NEW PROCESS OF LATEX COAGULATION.

According to the claims of the patent taken out in Brazil by Professor Heinrich Coloseus, of Berlin, it has been recognized of late years that the quality of rubber is subject to wide variations, in accordance with the mode of its extraction and coagulation. Considerable progress has been realized in this matter, but without a thoroughly satisfactory process having been discovered.

In addition to the methods of smoking usual in Brazil, coagulation has been effected by one or the other of two systems. By the first, the rubber and the bodies which accompany it are precipitated by the addition to the latex of various acids, while by the second substances are added which precipitate or transform into salts the solid bodies suspended in the rubber latex.

The disadvantage of all these processes is that they precipitate albuminous substances at the same time as the rubber, and in such a form that they rapidly decompose, and lead to the decomposition of the rubber. Under the new patent the albuminous substances are eliminated in such a shape that their durable stability is assured.

For this purpose an alkali is first added to the latex, in particular hydrate of potassium or of sodium, or of any other substance with alkaline reaction, working with the formation of a soluble salt on the albuminous and other bodies which accompany the rubber. If necessary the reaction can be completed by heat. By the addition of heavy ferrous or alkaline-ferrous salts, hydrates or oxides, or of mixtures of these substances, the soluble salts of the albuminous or similar substances are transformed into compounds difficult or impossible to dissolve in water. The separation of the solid bodies takes place either immediately, after a protracted rest, or after heating. In the rubber as separated are then found the albumen or the albuminous substances, or the saponifiable resins in the form of their insoluble salts.

It is stated that the products obtained by the experiments made on this system have been found of excellent quality.

PHYSICAL TESTS OF RUBBER.

IN the "Bulletin de l'Office Colonial," Paris, Messrs. Heim and Chèneveau have lately dealt with the methods of physical tests of rubber in connection with their commercial value, emphasizing the following points:

I. The possibility of differentiating two rubbers by numbers indicating their industrial value. In the present state of knowledge, purely chemical determinations will not solve the problem, which calls for mechanical or physical tests.

II. A rapid test of the crude material would simplify matters a good deal.

The physical tests include: Extensibility with constantly increasing loads; elasticity of traction, cycle of hysteresis and permanent elasticity; combined test of extensibility and elasticity—"nerve"; successive cycles of hysteresis; extensibility with constant charge; varying length of charge; tenacity; compression with progressively increasing loads; elasticity of compression; extreme compression; friction or abrasion and hardness.

III. ELECTRIC TESTS: Resistance of insulation; resistance; dielectric constant; electrostatic rigidity.

IV. VARIOUS PHYSICAL TESTS: Action of heat; action of light—coloration, absorption; solubility; viscosity of rubber solutions; adhesion; absorption and diffusing of gases.

V. Determinations have been tried of the viscosity of raw material dissolved in appropriate solvents. These tests consisted in dissolving the rubber in benzine and running off the solution through a capillary tube. Tests of adhesion are often effected by dissolving the rubber in oil of naphtha, but are of no importance except for rubbers used in making waterproof fabrics. Other tests are those of the absorption of gas, only of interest to the aeronautic industry, as well as heating the rubber up to 100 degs. and noting the time it takes to become tacky.

VI. For the establishment of a general and useful test it has been found necessary to return to those long used for vulcanized rubber. Plantation Para, it is added, tears easily, its homogeneousness being only apparent. A test of this character only appears possible with a homogeneous layer of rubber of regular thickness.

VII. In tests of vulcanized rubber, mixed with sulphur, hot vulcanization seems to give better results than the cold process. The proportion of sulphur must not be too small nor too large.

VIII. For a long time traction tests have been made with the traction machine or dynamometer for defining tenacity and extensibility. Test pieces have generally the shape of prismatic bars, fixed at their extremities to the jaws of the machine. Two lines traced on the margin of the bar serve to indicate the extension to the breaking point. For this work it is found that moulded test pieces are preferable to cut ones.

Laws of more or less complicated nature, determined by the successive extensions and contractions of test pieces, afford a certain test of rubber, defining its "cyclic fatigue"; the rubber assuming a more stable condition, which, however, is not easily defined.

It may be concluded that the test of extensibility alone is insufficient, the addition of the test of elasticity being required to bring out the other fundamental qualities of the rubber. The larger the number of different qualities to be defined the more exactness will there be in the determination of the various grades of rubber.

A point to be noted is that when rubber has been stretched under a continuous load, applied gradually or once for all, the test piece increases in length.

IX. The most precise and rational course is that of comparing under identical conditions the technical properties of the rubber to be tested with those of a standard sample, both having been vulcanized without any other weighting substance than sulphur.

New Machines and Appliances.

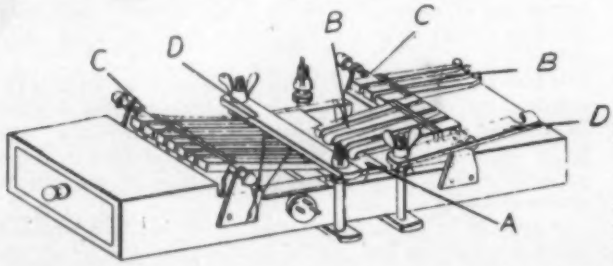
ROYLE THREE-WAY HEAD STRAINING MACHINE.

THE illustration shows a new reclaiming strainer designed for heavy work, and plenty of it. The body of the machine is supported on a broad, square base. It is chambered for heating or cooling, and is accurately bored to receive the large and powerful stock worm. This has ample thrust bearings, is driven by a belt and cut spur gearing, and is capable of handling large quantities of stock. The feed hoppers are large and specially constructed for capacity. The three-way head has heating or cooling chambers, and the holes in the plates are

square instead of round. This feature is a decided improvement in straining machines where capacity is desired. The usual wire gauze strainers can be removed for cleaning by unscrewing the octagonal headed bushings with the special socket wrench provided for that purpose. [John Royle & Sons, Paterson, N. J.]

SPRIGG'S MACHINE FOR REPAIRING RUBBER GLOVES.

THIS machine is designed for repairing glove tips. Fourteen finger trees are arranged seven on each side of an electrically heated vulcanizing platen. They are pivoted on rods and the ends that rest on the platen are flattened. The finger

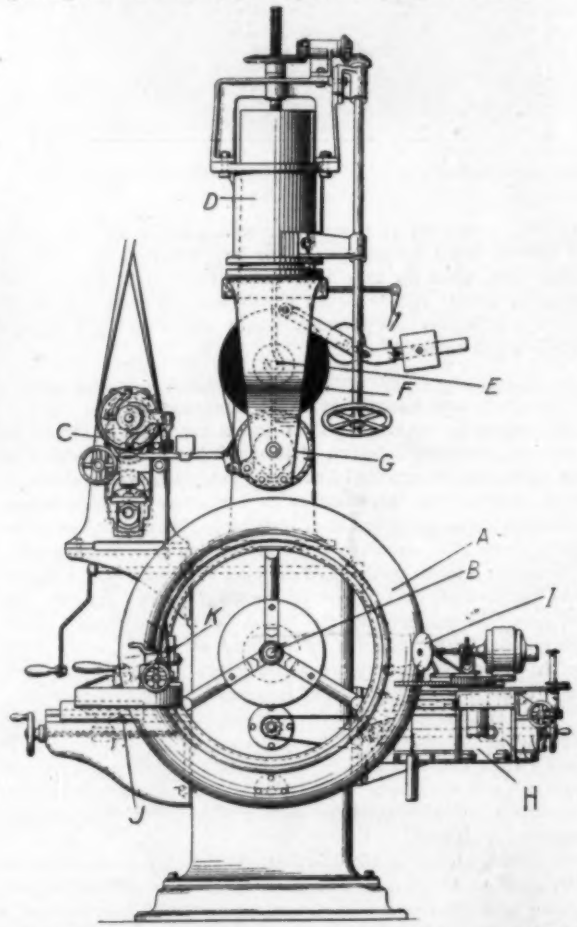


A—Vulcanizing Platen. B—Finger Trees. C—Finger Rods. D—Clamps.

of a glove is drawn over a tree, and the hole covered with a small piece of repair stock. This part is then located on the flattened portion of the tree, after which it is brought down in position on the platen, and when each finger and tree has been similarly treated they are all clamped down. A thermometer attached to the platen indicates the degree of heat.

THROPP-DELASKI TIRE MAKING MACHINE.

THE illustration is a front view showing a tire core mounted on a spider revolved by a driving shaft. This shaft extends through the housing, has reverse gearing and is connected to a variable speed device so that the core is driven at various speeds to the right or left. A cylindrical head slides in a cylinder bolted to the overhanging stanchion and supports a roll of fabric in a frame. It is moved vertically by a screw, bevel gearing and an inclined shaft operated by a hand wheel.



A—Core. B—Driving Shaft. C—Variable Speed Device. D—Cylindrical Head. E—Fabric Frame. F—Fabric. G—Friction Roller. H—Sliding Carriage. I—Forming Discs. J—Sliding Plate. K—Trimming Knives.

The fabric, cut in bias lengths, is passed under a guide roller over the wooden friction roller, under another guide roller, and is then pressed firmly on the periphery of the core. At the same time the interposed wrapper is wound on a take-up roller.

Mounted on a sliding carriage are two plates that swing in opposite directions in a curve equal to the periphery of the core. These support the two motor driven forming discs.

The various layers of fabric are laid on the core and then stretched and formed down by these discs. The bead rings are

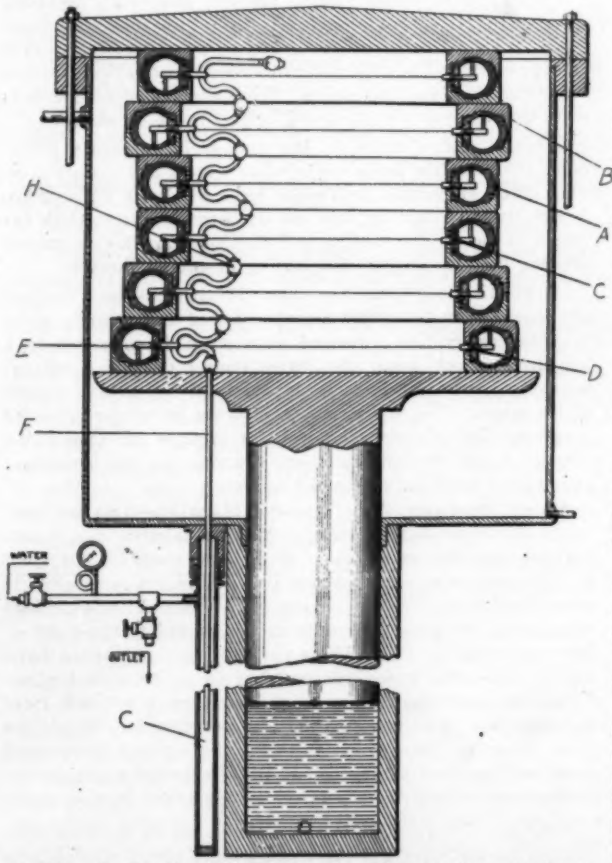
placed on the casing and the bead cores pressed in position, after which the rings are removed and fabric stretched over the cores.

A sliding plate on the left of the core supports a hook-shaped swinging arm carrying two trimming knives which trim the edges of the casing. The tire and core are then removed from the machine and placed in a mold or wrapped for vulcanization.

McLEOD'S TIRE MOLDS AND VULCANIZER PRESS.

THE invention illustrated comprises a live steam chamber, a hydraulic press and tire molds with connections so that water under pressure is admitted to the interior of the tire casing during vulcanization.

In use a tire is placed in the mold with the annular ring between its edges, forming a tight joint. Through this ring extends a valve which automatically discharges water or admits steam to the interior of the tire. The ring also supports a nozzle that delivers water under pressure to the interior of the tire. The mold is then placed on the ram platen and connected to the water inlet, and the succeeding molds are stacked and connected



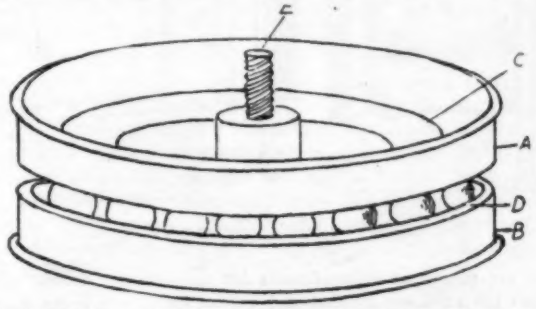
A—Tire. B—Two Part Mold. C—Annular Ring. D—Automatic Valve. E—Water Nozzle. F—Water Inlet Pipe. G—Water Receiver. H—Flexible Coupling.

together by flexible pipes and couplings. The press is then closed and pressure applied to the molds. Water under pressure is admitted to the interior of the tires, stretching the fabric, while the air is discharged through the automatic valve. Live steam is turned into the press chamber. This heats the water in the molds, and the tire is then cured both inside and out. When the cure is complete, steam from the molds is exhausted at the outlet pipe assisted by the steam pressure in the heater acting through the automatic valve.

In another patent the molds are first filled and water applied under pressure to the interior of the tire. They are then suspended from a track in a horizontal vulcanizer, and connected by flexible hose and couplings to a manifold and drain pipe. The subsequent operations are practically the same as just described.

CRESWICK'S DEVICE FOR PAINTING GOLF BALLS.

THE principal features are two wood or metal discs with circular grooves lined with rubber, and when placed one above the other they form a ball race. The upper disc is re-



A—Upper Disc. B—Lower Disc. C—Upper Rubber Lined Groove. D—Lower Rubber Lined Groove. E—Screw for Attaching to Vertical Spindle.

volved and the lower is stationary. Paint is applied to the grooves and the golf balls are placed in the lower disc groove. The upper disc groove is then brought down in contact with the balls. When the upper disc is revolved the balls are rotated, distributing a coat of paint evenly over the surfaces.

DOUGHTY'S TIRE MAKING MACHINES.

HENRY J. DOUGHTY, who is well known in the rubber industry, especially as a designer of tire and footwear machinery, has recently been granted several patents on a series of machines and a process for making pneumatic tires. What he claims specifically is that he has evolved the first continuous process for making and curing pneumatic tires by machinery.

In the first place, a special loom weaves a strip of fabric, loose in the middle and heavy at the sides. This is woven on a slight curve. These strips are frictioned on a calender that has concave and convex rolls. From the calender the strip is lead automatically to the tire core, around which it is wound—once for single, twice for double, three times for triple plies, etc. While this winding goes on strips are applied for beads, etc. The tire tread is then added and the tire placed in a collapsible tread press that cures it some twenty minutes. Tires have been tested in Providence, where his plant is located, and have stood up with the best. In the illustrations Fig. 1 shows two views of the calender, that on the left being a front elevation, and that on the right a plan view showing the machine in connection with the tire core, on which the frictioned strip is wound as it leaves the rolls. The middle roll is convex while the upper and lower rolls are concave, the contour being such as to shape the strip passing through. The middle roll is driven faster than the others to friction the rubber into the fabric.

Referring to the right-hand drawing, the fabric *D* is fed to the calender by worm-shaped stretching rollers *E*, and then passes between rolls *B* and *C*, where the rubber, being fed between rolls *A* and *B*, is frictioned into it. On leaving the calender the edges of the fabric are gripped between two pairs of spiked belts, *F*, set at diverging angles to stretch the weft threads of the strip. It is then wrapped, while still warm, on the col-

lapsible tire core *G*, driven by the motor *H*. There are two of these cores, *G* and *I*, mounted on a frame which slides on rails *J*. When the desired thickness is built up, the strip is severed and the other core is brought in line with the calender. The covered core is then removed and another placed to receive the strip. As the covered cores are removed from the front of the calender they are placed on other frames for applying the treads, after which the tires are molded and vulcanized in the press shown in Fig. 2.

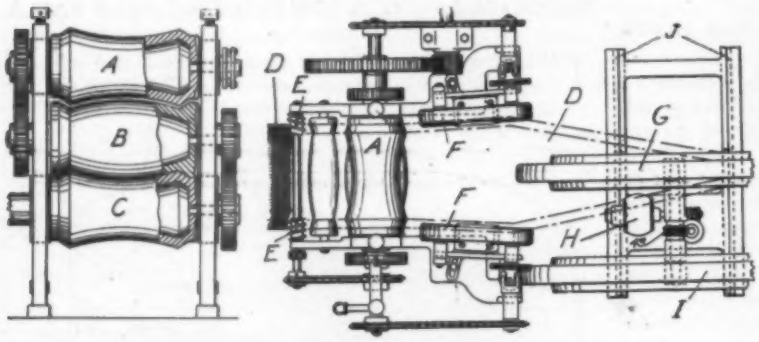


FIG. 1.—DOUGHTY'S FRICTION CALENDER FOR TIRE FABRIC.

This is a hydraulic press, a three-part mold and a collapsible core of eight segments. The mold consists of an upper platen *A*

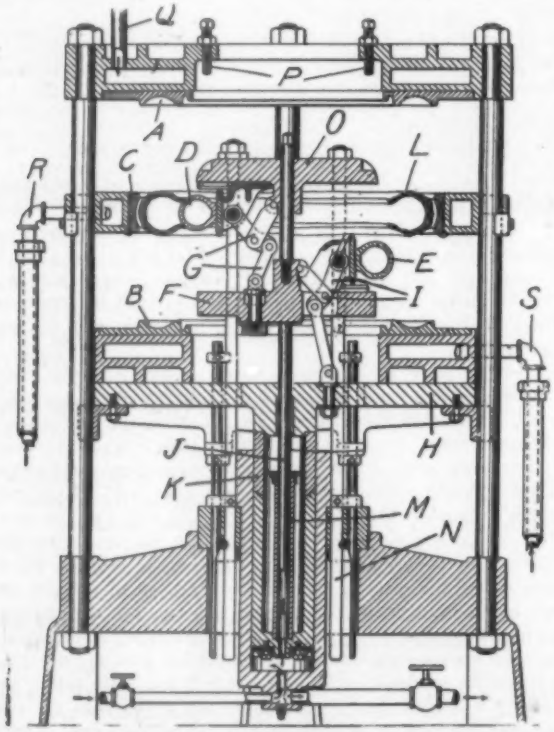


FIG. 2.—DOUGHTY'S COLLAPSIBLE-CORE VULCANIZING PRESS.

and a lower platen *B* for the sides of the tire, and a ring *C* for the tread, all chambered for steam. The core is made up of four segments *D* and four segments *E*, the former being connected with a plate *F* by toggles *G*, and the latter with the plate *H* by toggles *I*. The plate *F* is raised and lowered by the ram *J*, while *H* is operated by the hollow ram *K*.

With the casing *L* in position in the tread mold *C*, water is admitted to the cylinder *M* to raise the ram *J*. This raises the plate *F* and operates the toggles *G*, forcing the core segments *D* outward into the casing. At the same time the hydraulic pressure raises the ram *K* and plate *H*, and operates the toggles *I*, forcing the four segments *E* into the casing. The upward movement of plate *H* releases guide rods *N* and allows plate *O* to be raised against stop screws *P*. This forces the parts of the mold around the casing, while steam for vulcanization is admitted through pipes *Q*, *R* and *S*. When the cure is complete the rams are lowered, which opens the mold and withdraws the core segments from the tire so that it may be removed from the ring *C*.

OTHER DEVICES.

THORDARSON'S PAPER STRIP CUTTER.—This is a machine that receives the paper, or thin material of a like nature, from the roll and cuts it into strips which it winds compactly on reels. Each cutter is circular and grooved, and has a hub. The edges of the cutters are shearing edges. The hubs are formed with grooved rubber rings. The two gangs of cutters are placed on parallel shafts with the cutting edges of one bearing against the rubber surface of the opposite cutter. When the material passes between these revolving cutters it is cut into strips. These are wound on the reels under tension applied to the swinging reel frame by weights.

CAMERON CLOTH SLITTING MACHINE.—This prevents distortion of the material being cut by score cutters and a surface rewind roller which pulls with equal force on all the slit sections. A web tension roller smooths out the wrinkles in the cloth before it is slit by the cutters, and supplementary knives extend between the slit sections for cutting unsevered threads.

ERICKSON'S CHANNEL CEMENTING MACHINE.—The object of this invention is to control the cement feed and properly apply it. The cement tank, mounted on a stand, is connected to a belt driven stock worm that forces cement through a vertical revolving brush. There is a vertical revolving guide adjacent to the brush. This is normally held down below the brush by a spring. In operation the work is brought up against the bottom of the guide, lifting it and bringing the flap between it and the brush which applies the cement.

ADAMS INSULATED WIRE WINDING MACHINE.—This machine, which has been assigned to the Western Electric Co., winds various sizes of wire on spools of different lengths. The spool is supported on an arbor rotated by a motor. A wire guide is attached to a carriage that moves on a track. A back carriage also travels on a parallel track, and is moved to the right or left by an endless belt. These two carriages are united by a slotted lever that swings on a pivot in a horizontal plane. When the back carriage moves to the right or left the front carriage and guide move in the opposite direction, laying the wire evenly on the revolving spool. The carriage is reversed automatically by magnets on the back carriage engaging the endless belt. When the winding is complete the machine stops.

NEWTON'S DEVICE FOR TESTING AIR BRAKE HOSE.—This consists of an air valve and ports operating a piston that reciprocates in a short cylinder. A short piston rod passes through a stuffing box in the valve body, and supports an expanding clamp on its outer end. This is enclosed in a circular bushing attached to the valve body which has inner cam surfaces engaging movable fingers of the expanding clamp. One end of the hose to be tested is inserted in the clamp and air is admitted to the piston. This moves the clamp and test piece forward, and the fingers are forced together by the cams, firmly gripping the hose. At the same time air for testing is admitted through a small opening in the piston head and rod. When the test is completed the valve is opened and the hose is automatically removed from the coupling.

Embargo Notes.

BEGINNNING with the first of December came unofficial assurances from those connected with the State Department of the United States that the rubber embargo wuold be lifted shortly. Sir Cecil Spring-Rice, the British Ambassador at Washington, also stated that as soon as a "satisfactory method could be arranged rubber would again be shipped to America; the arrangement to be in the form of permits issued by the British government. So far these hopes have been realized.

The embargo and the difficulties placed in the way of the reshipment of rubber appear to be quite effective. In October, for example, re-exports amounted to only 551,093 pounds, valued at $295,046. In shipping to Sweden, for instance, the English, French and Swedish ambassadors agree to a shipment and then it goes up to their consuls in New York for certification—without this the ships refuse it.

A cable to THE INDIA RUBBER WORLD from The Rubber Growers' Association, London, says:

"Consider possible shortly obtain permits exemption embargo provided suitable guarantees received from United States."

The Bank of England called a meeting of bankers, where it was mentioned that America had forbidden the export of gold. The comment of a leading rubber authority in London is that if rubber is to be shipped to New York from Para gold will have to be sent for it. This same authority predicts that America will enforce from neutral countries a bond guaranteeing imports to be for home consumption only.

The Para rubber factors are naturally much interested over the rubber embargo. As a consequence they look for higher prices, and an offer of two cents advance causes a demand for five.

It must not be forgotten that England is using more rubber than ever before. Rubber goods formerly made in Germany must be made at home; and German rubber goods were a big factor in England. Of the solid tires fully eighty per cent. were German made. Hard rubber was nearly all of German make. And there was cheap hose, proofing and sundries, in all of which the Germans got their full share. All of this work and more is now being done in English factories. Even "Klingerit" is being put on the market, and one English firm has applied for permission to make the trade mark its own.

The word has gone forth that English soldiers shall wear rubber boots and the footwear factories are preparing to turn out ten thousand pairs of Wellingtons a week. Light rubber surface coats are also recommended both for British and French soldiers. The former wear coats that are cravenetted, and the latter heavy overcoats that soak up water like sponges.

Add to these requirements tires for 250,000 autos used by the Allies, ground sheet and goods for domestic use, and much rubber is required.

Another reason that the British people are looking out for their own stores of rubber lies in the fact that their shipments have been so large. This in spite of the fact that France, Germany and Italy almost stopped importing rubber. Russia, for example, took 2,100 tons in October, 1914, against 423 tons in October, 1913; while the United States took 3,873 tons, against 1,453 during the same period. In other words, Great Britain exported about 50 per cent. more rubber during the month of October, 1914, than during the same month in 1913.

Points of interest in the history of the rubber embargo are the story of the English government's knowledge of large quantities of crêpe bought in New York, paid for there before shipment and consigned to "a native of Sweden." At the same time came the prohibition by the United States treasury of the disclosure of information concerning export shipments until 30 days after the vessel had cleared.

English correspondents state that it is still possible for New York to secure what it requires of plantation grades by guaranteeing that it will be used for home consumption and not re-exported. This is denied by exporters in New York, who have offered to give any sort of a guarantee. They (the British) state that the government will probably pass legislation shortly covering licenses to export to neutral countries and unrestricted exports to the Allies.

The British Prime Minister, speaking of embargoes such as wool and rubber, said in a recent speech that the measures were not taken to increase British trade nor to diminish the trade of any neutral countries, but solely to prevent goods from reaching the enemy.

The Rubber Growers' Association, of London, is trying to arrange that rubber coming from Ceylon or the Malay States through England into France no longer pay import duty. At the present time France insists upon a certificate of supervision from the British Customs, guarantees, etc. So far the Foreign Office has refused to interfere and it is doubtful if the conditions will be waived.

In response to an inquiry on the part of The Rubber Growers' Association regarding the term "British Ports" and Japan, the following letter is given out from the Colonial Office:

Copy of letter from the Under Secretary of State, Colonial Office, addressed to the Secretary, Rubber Growers' Association, under date of 21st November, 1914:

"It was intended that the exception in favor of 'British Ports' from the prohibition of the exportation of rubber from Ceylon and the Straits Settlements should apply to all ports in Australia, Canada and other British possessions. This has been made clear to the Governors of Ceylon and the Straits Settlements and all British oversea governments have been asked similarly to prohibit the exportation of rubber except to British ports.

"As regards the exportation of rubber from Ceylon and the Straits Settlements to Japan, Mr. Harcourt is prepared to entertain applications from manufacturing firms in that country for permission to export rubber from Colombo and Singapore for use in their factories. The Dunlop Rubber Co. have already been granted permission to ship to Japan for use in their mills in that country 50 tons of rubber a month, in each case, from Colombo and Singapore. Similar applications from manufacturing firms in France will also be considered.

"It is proposed also to allow shipments of rubber from Colombo and Singapore to Vladivostock for use in Russia as soon as the Russian requirements have been ascertained."

Recent advices mention a long cable message from Ambassador Page, London, in which British views on embargoes are said to be fully outlined. Great Britain asks that the United States government use all her efforts to prevent the shipment of contraband goods. It is understood that the United States will cooperate, and in that event the embargo would be lifted.

SENTIMENT IN THE FAR EAST—AND FACTS.

There is even more unrest in the planting districts in Ceylon and Malaya than in the United States. A shortage of acetic acid frightened the planters into coagulating experiments with sulphuric acid "toddy vinegar" (made from cocoanut shells), air and smoke processes, etc. It may be that plantation "pelles" will one day be in the market just as are the Brazilian.

Restriction of output was also preached. In Malacca it was proposed to tap only every other day, and in the Straits five days a week.

Both Ceylon and the Malay States have made and are making strenuous representations to the Colonial Secretary concerning the loss of their "second best customer," the United States. These will undoubtedly be listened to with as much attention as any of the many protests.

The American Consul at Colombo, Ceylon, Mr. W. A. Leonard.

is very active in informing our own state department and trying to get a modification of the embargo.

A suggestion that the United States prohibit the export of crude rubber from its own ports is being widely copied in the papers in the Far East.

DUTCH EAST INDIES.

A telegram from Batavia, Java, announces that no prohibition is to be placed on rubber shipped from the Dutch possessions in the Far East. According to the American consul there, the monthly shipments from Java and Sumatra amount to 53 tons. The new Dutch boats begin sailing from New York to Java and Sumatra ports direct the 20th of December.

The "Times of Ceylon" says, in part:

WHAT AMERICA WOULD DO.

"Local producers and exporters are hopeful that the United States government will come to the assistance of rubber importers in that country. Guarantees from individual importers in America that rubber purchased by them was for internal use only and was not for re-exportation would be of little practical value. How could such guarantees be enforced and how would it be known that rubber, originally purchased for internal purposes, might not change hands in America and be re-shipped? However, if the American government could prohibit the re-exportation of rubber from the United States the situation would be completely and most satisfactorily solved. The fact that rubber is contraband must be borne in mind in this connection, and the opinion in Colombo rubber circles is that America could not be accused by Germany of a breach of neutrality if she took such action."

EMBARGO EFFECTS.

THE Rubber Manufacturers' position as to the effect of the Rubber Embargo is thus summarized in a statement prepared by the Rubber Club of America:

The British decision holding crude rubber a contraband of war cuts off 50 per cent. of the normal supply required by the United States.

The embargo has resulted in an increase of from 35 to 45 cents a pound, or 50 per cent., in the crude product. The statement asserts that the 125,000 Americans employed in the rubber industry will suffer if present conditions continue. The cost to the industry of the embargo is $250,000 a day, it was stated. The statement says in part:

"The reason for Great Britain's drastic action is to be found in her determination to prevent Germany and her allies absolutely from obtaining any of the crude rubber grown on the great plantations in the British colonies of Ceylon and the Federated Malay States. The importance of rubber in the present war is evident from the extensive use of automobiles for all kinds of transport, as well as rubber footwear, ground sheets, clothing and balloon fabrics.

"During the early days of October, England began to treat crude rubber as contraband of war, and about the same time placed an embargo on all shipments of rubber from the colonies to any but English ports. This meant that all direct shipments from Singapore and Colombo to New York were stopped. But rubber came on from London as before. On November 13, England extended the embargo to apply to all shipments of crude rubber from all English ports to any countries except those of her allies. Since that time no plantation rubber has been shipped to the United States.

"A special committee of rubber manufacturers and importers has been working with the State Department at Washington on this problem, and the State Department is thoroughly alive to the importance of the situation. Owing, however, to the uncompromising attitude of the British Government nothing has been accomplished, and the industry and the consuming public faces a very serious situation.

"Unlike the majority of our American industries, the rubber industry is entirely dependent upon crude rubber imported from foreign countries. In fact, the rubber industry is probably the largest business in this country wholly dependent on raw material brought from abroad. This makes the cutting off of her principal source of supply doubly serious.

"At the present time the only sources of supply for American manufacturers are South America, Mexico and Africa. The Brazilian rubbers are normally considered more expensive, and the African and Mexican rubbers are of inferior quality. Six or seven years ago the greater part of the crude rubber used in this country came from Brazil. On account of the increased consumption, due largely to the manufacture of automobile tires, production since that time has been increased by the addition of the cultivated rubber of the Far East, until at the present time 60 per cent. of the crude rubber used in American factories comes from the British Empire. During this time consumption has fully kept pace with the increased supplies.

"The normal consumption of rubber in the United States at the present time is about 60,000 tons annually. Of this amount about 35,000 tons is plantation rubber. which normally sells from about 45 cents to 55 cents a pound. Already the embargo has forced the price up to about 90 cents. Normally about 200 tons of crude rubber per day is consumed in the United States. On account of this great increase in cost of rubber and its collateral results, the increased cost to the industry is approximately a quarter of a million dollars per day. As to what the ultimate per diem cost to the industry will be, if the present embargo is allowed to remain, no one can predict.

"It is not only in the increased prices of rubber goods that the people of the United States will suffer through this seemingly unwarranted embargo. Fully 125,000 people are directly or indirectly employed in the rubber manufacturing industry. Already owing to the slowing up of mills due to the lack of supplies it has been necessary to lay off a good many employees. In the city of Akron alone, known throughout the country as The Rubber City, 25,000 people are employed in the rubber factories. Pennsylvania, Delaware, New York, New Jersey, Connecticut, Rhode Island and Massachusetts are important rubber manufacturing States. Unless some arrangement with the British Government is arrived at soon the effect on this important industry will be far reaching and the consumers throughout the country will be obliged to pay increased prices for all rubber goods."

IMPORTANT ADDITIONS TO THE "CONTRABAND."

The recent additions to Great Britain's contraband list will continue to effect the American rubber industry. The following are now absolute contraband: Sulphur, glycerine, zinc and lead ores, acetones, fractions of distillation between benzol and cresol, inclusive; antimony, together with sulphides and oxides of antimony; tires for motor vehicles and cycles, and repair material; rubber waste and reclaimed rubber; goods made wholly of rubber.

An American advertisement, signed by a New York crude rubber firm, in a leading German paper reads thus:

DIRECT PURCHASE AND SHIPMENT OF CRUDE RUBBER TO GERMANY AND AUSTRIA-HUNGARY.

I offer my services for the purchase of crude rubber and gutta percha of all kinds in this market. Shipment by neutral vessels to Sweden, Norway, Denmark or Italy. Cash here against receipt for delivery of goods or bill of lading. Freights and insurance against war risks can be covered here, but must be paid for in advance.

MECHANICAL RUBBER GOODS MANUFACTURERS' ASSOCIATION BECOMES A DIVISION OF THE RUBBER CLUB OF AMERICA.

AT a meeting of the Mechanical Rubber Goods Manufacturers' Association, held at the Union League Club, New York, December 10, it was unanimously decided that they should become a division of the Rubber Club of America.

A dinner preceded the business meeting, at which about 35 representative manufacturers sat down to a table handsomely decorated with chrysanthemums and autumn leaves. At the business meeting Mr. George B. Hodgman, president of the Rubber Club of America, proposed them as a division of the Club.

He was followed by Mr. William T. Cole, of the Fabric Fire Hose Co. and president of the association; Mr. George E. Hall, of the Boston Woven Hose & Rubber Co.; Mr. Howard E. Raymond, of The B. F. Goodrich Co.; Mr. John J. Voorhees, president of the Voorhees Rubber Manufacturing Co. and secretary and treasurer of the association, and Mr. S. D. Baldwin, president of the Cincinnati Rubber Manufacturing Co.

Upon motion of Mr. Raymond it was voted that the Mechanical Rubber Goods Manufacturers' Association disband and that the membership be transferred to the Rubber Club of America, with the recommendation that all firms in the mechanical branch of the rubber trade join this division. This was unanimously passed. Mr. William T. Cole was then elected chairman of this division.

President Hodgman has done notable work in merging this association with the Rubber Club of America, as it will greatly strengthen both organizations.

Mr. Cole is also just the man for the position of division chairman—he is capable, energetic and popular.

FIRMS REPRESENTED AT THE BANQUET.

The Acme Rubber Manufacturing Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridgeport, Mass.
Boston Belting Co., Boston, Mass.
Beck, Wm. & Chas., Lawrence, Mass.
Continental Rubber Works, Erie, Pa.
Canfield Co., The H. O., Bridgeport, Conn.
Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio.
C. C. C. Fire Hose & Rubber Co., Canton Junction, Mass.
Callahan Co., Cornelius, Boston, Mass.
Dick, R. & J., Limited, Passaic, N. J.
Empire Rubber & Tire Co., Trenton, N. J.
Essex Rubber Co., Trenton, N. J.
Electric Hose & Rubber Co., Wilmington, Del.
Eureka Fire Hose Manufacturing Co., New York.
Fabric Fire Hose Co., New York.
Goodyear Tire & Rubber Co., Akron, Ohio.
Goodrich Co., The B. F., Akron, Ohio.
Gutta Percha & Rubber Manufacturing Co., New York.
Home Rubber Co., Trenton, N. J.
Howe Rubber Co., New Brunswick, N. J.
Keystone Rubber Manufacturing Co., Erie, Pa.
New Jersey Car Spring & Rubber Co., Jersey City, N. J.
New York Rubber Co., Matteawan, N. Y.
New York Belting & Packing Co., New York.
Niedner's Sons Co., Charles, Malden, Mass.
Peerless Rubber Manufacturing Co., New York.
Pennsylvania Rubber Co., Jeanette, Pa.
Republic Rubber Co., Youngstown, Ohio.
Rubber Stopple Co., Long Island City, N. Y.
Revere Rubber Co., Chelsea, Mass.
Rubber Goods Manufacturing Co., New York.
Thermoid Rubber Co., Trenton, N. J.
United & Globe Rubber Manufacturing Cos., Trenton, N. J.
Voorhees Rubber Manufacturing Co., Jersey City, N. J.
Whitehead Brothers Rubber Co., Trenton, N. J.

A fire has done $30,000 damage to the wool boot factory at Hastings, Michigan, belonging to the United States Rubber Co. It was started by friction in machinery on an upper floor.

THE RUBBER CLUB RELIEF FUND FOR EUROPEAN WAR SUFFERERS.

Contributions to the relief fund for the European war sufferers, started by the Rubber Club of America, to the amount of $2,603.50, had been received up to December 26. Donations of $25 or more, in addition to those published in our issue of December 1, are as follows:

AMERICAN RED CROSS.

United States Rubber Co., New York	$100
American Hard Rubber Co., New York	50
Boston Woven Hose & Rubber Co., Boston	25
	$175

BELGIAN RELIEF FUND.

Rubber Sundries Manufacturers' Association (in lieu of their annual dinner)	$200
Tyer Rubber Co., Andover, Mass.	100
	$300

The amount contributed to the Belgian Relief Fund has been forwarded to the Belgian consul, Liverpool, Account No. 8, the particular branch of this work in the interest of which Mr. E. E. Buckleton, of the Northwestern Rubber Co., of Liverpool, recently visited this country.

Besides the sums above noted and those already published, $828.50 has been contributed in lieu of tickets for the sixteenth annual banquet which has been abandoned this season.

THE RUBBER TRADE ASSOCIATION OF NEW YORK HOLDS ANNUAL MEETING.

The first annual meeting of the Rubber Trade Association of New York, an organization formed in October last by about 20 New York rubber importers, brokers and dealers in crude rubber, and mentioned on pages 665 and 79 of the September and November numbers of this publication, held its first annual meeting on November 2, when a few changes were made in the board of directors and committees. On the list of directors the name of A. V. W. Tallman has been substituted for that of H. A. Astlett. The membership committee has been increased by two additional members, Charles T. Wilson having resigned and the names of W. G. Ryckman, L. W. Bayles and T. H. Desmond been added.

The association reports rapid progress and encouraging support, its membership being about double that at time of organization, with further applications before the committee, and many manufacturers having expressed willingness to co-operate in any way likely to benefit the trade.

A NEW RUBBER COMPANY AT BUCYRUS.

The Bucyrus Rubber Co. has incorporated for the manufacture of rubber goods and has secured a factory at Bucyrus, Ohio. This company has an authorized capital stock of $150,000, in 6,000 shares of $25 each. Morgan Howells, the general manager—who is also vice-president and general manager of the recently organized Penn Rubber Traffic Co., and who claims responsibility for the organization of the Morgan & Marshall Rubber & Tire Co. and the Chester Rubber & Tire Co.—states that it is the hope of the company to be manufacturing on or about March 1, the output to include tires and tubes, belting, hose rubber, soles and heels. The old plant of the Bucyrus Steam Shovel & Dredge Co. has been secured and will be equipped for this line of manufacture. This property covers an area of 3½ acres, the buildings having a floor area of 47,715 square feet. The officers and directors of the company are: Elmer E. Gallup, president; Patrick J. Carroll, vice-president; Jay Taylor, treasurer; George B. Smith, secretary; Morgan Howells, general manager, and David C. Thornburg. The company also has a Pittsburgh office, at Third avenue and Wood street, in charge of G. B. Smith, general sales manager.

The Editor's Book Table.

THE LOWER AMAZON. A NARRATIVE OF EXPLORATIONS IN the Little Known Regions of the State of Pará, on the Lower Amazon, with a Record of Archæological Excavations on Marajo Island, at the Mouth of the Amazon River, and Observations on the General Resources of the Country. By Algot Lange. [8vo, pp. 468, with 6 maps and 109 illustrations. 1914. G. P. Putnam's Sons, New York and London.]

THERE is genuine entertainment in this volume of exploration and observation in a part of eastern Brazil which includes within comparatively small area some of the best and some of the least known parts of the country. This takes in the city of Para and the hinterland of that region.

Mr. Lange makes a sweeping division of Brazilians into two classes—those who wear shoes and those who do not—and he gives his hearty preference to the latter. Some of his anecdotes illustrate the extremes of these classes. Only a few hours' journey from Para he was entertained by a rubber worker who ceremonially put on a shirt in honor of his guest but deliberately took it off and hung it on a bush when he went out to work. A little later, when Mr. Lange had returned to Para, he was refused admittance to a street car because he did not have on a necktie. Of the high society of Para, with its "South American Paris," with "its two blocks of electric glare" and its taxicabs, which whiz five or six blocks and then whiz back because there is no road on which to whiz any further," Mr. Lange has opinions not at all flattering; but for the "Caboclos," or half-breeds, who form the working class of the interior, he has unbounded regard. In this he is following the opinion of the best ethnologists, and his descriptions of the people and the reception they gave him show them in a very attractive light. We have had descriptions, often and again, of the rubber-worker and his melancholy rounds tapping the trees; but this book takes us into the rubber-worker's home and shows him as a human being, describing not only his work but his economies, his household furnishings or lack of them, and his diversions.

A YOUNG GIBOIA. THIS YOUNG BOA CONSTRICTOR SOON GREW TAME AND PLAYFUL.

Prices of all civilized requirements are enormous, but still they have suffered a great decline since the days of three-dollar rubber. In this connection it is not inappropriate to express again the opinion, more than once given in this magazine, that, no matter how low the price is brought by plantation rubber, a certain amount of the Brazilian forest product will still be gathered. Much of the cost has been in the wholly absurd and artificial cost of the articles of commerce sent to the rubber forests in exchange for the district's one product and, as the price of rubber declines, the worker's money will go further, his simple requirements will still be met, and he will still gather rubber.

The description of the flooded districts is particularly interesting, but the references to animal life are scanty and unsatisfying. He states that he is anxious to get a big snake-skin to show certain doubting friends in New York that there are some snakes along the Amazon. His helpers brought him a skin eleven feet long, but he says that he wants one five times that length. Mr. Lange is evidently not one of those who want but little here below nor want that little long. Mr. Lange visited with one tribe of Indians where the men are entirely nude and states that during his stay he adopted the national costume, save for one unimportant detail. Presumably, he wore his eye-glasses. And this, be it remembered, was but a short journey from the town where he could not board a street car for lack of a necktie.

The author has brought with him to New York a large collection of ancient pottery, which is, after all, more informing than snake-skins. A large number of the pieces are shown in illustration. The chapter on the products and prospects of Brazil does not, of course, make any claim to be an exhaustive treatment of so vast a subject. An appendix gives a vocabulary of the Indians with whom the author visited. An index-glossary is a helpful feature for the average reader.

INSULATION AND DESIGN OF ELECTRICAL WINDINGS. BY A. P. M. Fleming, M. I. E. E., and R. Johnson, A. M. I. E. E. Longmans, Green & Co., London and New York. [8vo, 224 pages, cloth covers.]

This is a very thorough treatment of the subject from an electrical point of view. In this day of high voltages and larger and more costly units a book of this sort is timely. The authors in the preface mention that insulation is the vulnerable part of electrical machinery. This is unfortunately true, and manufacturers and users often have suffered from unreliable insulation. The authors, who have had many years' practical experience in connection with insulating problems, have covered the field very thoroughly. To do this they have given the underlying principles covering insulation, and pointed out methods by which insulation can be carried out with precision. The volume is adequately illustrated by diagrams, and has a very complete and excellent index.

DE RUBBER-CULTUR EN DE RUBBER-HANDEL VAN NEDERlandsch-Indie. By W. J. van de Leemkolk. Ruycrok & Co., Batavia, 1914. [Paper cover, 48 pages.]

The book is a reprint of a lecture read during the first rubber congress in Batavia, in October last, and covers the whole field of rubber planting and rubber trade in the Dutch possessions of India. *Hevea* was introduced in Dutch India in the year 1876. Further experiments were made, beside *Hevea*, with *Castilloa elastica*, *Ficus elastica* and different kinds of *Manihot*. In 1913 there existed 550 enterprises interested in the production of rubber in Dutch Indies, of which 332 were situated in Java. The area under rubber culture extended in 1906 in Java to 25,000 acres, but had reached in 1913 245,000 acres. In Sumatra there was in the same time an increase from 6,000 acres to 240,000. The lecture gives, further, a description of the situation in the different parts of the Dutch Indies, and contains a large quantity of statistical information, which is especially useful, as those statistics go deeply into details. The little book, which seems to be printed for private circulation only, deserves to be read, as it contains in a small space an enormous amount of

material, and is a valuable contribution to the literature on the economic development of the eastern rubber industry. The volume closes with a short bibliography of the existing literature.

NEW TRADE PUBLICATIONS.

THE India Rubber, Gutta Percha & Telegraph Works Co., Limited, Silvertown, London, are the publishers of a very beautiful souvenir. The occasion for its issuance was the presentation by the Rubber Growers' Association of rubber flooring to the Hospital for Sick Children. The presentation was made by Lady Jellicoe, the wife of Admiral Sir John R. Jellicoe, of the British navy. The booklet is illustrated with interior views, showing the rubber tiling laid in the consulting and dental rooms. Incidentally it is interesting to remember that the Silvertown company has furnished rubber tiling for over 200 battleships and liners, and more than 100 banks and public buildings.

The December calendar of the monthly series which the Derby Rubber Co., of Derby, Connecticut—manufacturers of reclaimed rubber—has sent out to the trade during the year just closed is artistically pleasing, as has been all its predecessors, the complete series forming an interesting collection of views appropriate to the different seasons.

Another set of monthly calendars has been received from W. G. Brown & Co., of Cincinnati, dealers in crude and reclaimed rubber, the final number for the year showing a big game hunting scene.

The Independent Rubber Co., Limited, of Merritton, Ontario, has recently sent out an illustrated catalog of its footwear. The book is nearly 4x8 inches in size, contains 72 pages, and is printed in two colors—black and buff. The use of the two colors enables the company to give at least an approximate idea of some of its colored rubbers. It makes, for instance, certain lumbermen's shoes with red soles. It also makes an all-red boot called the "Dreadnaught." Another interesting rubber shown in this catalog not known in the States is called the "Gem." It is a high-heeled croquet with a service heel, and has as its particularly distinctive feature a Jersey cloth top just covering the instep and fastened with three buttons. It has a general resemblance to the leather button Oxford. The half-tone cuts in the catalog give an accurate idea of the company's output.

The Manning, Maxwell & Moore Co., Inc., of 119 West Fortieth street, New York, publishes a complete and comprehensive catalog of 1,174 pages. It is illustrated with excellent half-tones of the various machine tools handled by this enterprising firm of machinery dealers. The great progress made in the manufacture of modern machine tools of all descriptions is shown in this book. Automatic machinery is taking the place of the slow and laborious hand operated machines. The electric motor is applied to any machine tool, if so specified. Many special tools for specific purposes in the tool room or laboratory are concisely described and rendered still more intelligible by adequate illustrations.

As the manufacture and repair of tires constitute such an important branch of the rubber industry, the two catalogs recently issued by the Williams Foundry & Machine Co., of Akron, are of special interest. One of them (in loose leaf form) deals with "Specialties for the Tire and Rubber Factory," including building stands, various forms of nest molds, hydraulic accumulators and collapsible cores. Prominence is likewise given to the advantages of the boltless quick opening simplex vulcanizer head, of which a number of patented models have been introduced, but have failed to achieve the success attained by the new system, which can be attached to any bolted vulcanizer, making it a thoroughly efficient machine. The new head is essentially a labor-saving device, and a time saver as well, one prominent tire factory where it is in use taking only twelve minutes to open a press containing a stack of molds six feet high and to insert a new batch.

Another prominent feature of the Akron-Williams press and vulcanizer is the automatic packing and locking device, which requires no bolts or nuts for tightening, and which is attached to the combined tire press, vulcanizer, cooling tank and mold lift, which also has the quick acting boltless head.

The second catalog, in booklet form, contains a full description of the Akron-Williams automobile tire equipment.

Both the catalogs are abundantly illustrated, and are replete with information regarding the Akron-Williams products.

The November number of the "S. A. E. Bulletin" contains much that is of interest to the tire manufacturer. It covers, for example, the standard sizes of pneumatic tires that are under consideration for recommendation for car manufacturers. There is also a paper by L. Greenwold, of the Firestone Tire & Rubber Co., well illustrated, covering "Factors Affecting Tire Wear." There is also an exceedingly practical and informing paper on "Tire Fabrics" by Henry Van Riper Scheel, of the Brighton Mills. Both of the papers are followed by interesting discussions.

The "Trinidad and Tobago Bulletin," August-October, 1914, contains interesting notes on the extraction of oil from Para rubber seeds and *Castilloa elastica* seeds. The conclusion is that the Para seed is of value as an oil producer and for feed cake, but the seed of the *Castilloa elastica* is of doubtful value.

At the Thirteenth annual meeting of the Alumni Association of the Philadelphia Textile School an interesting paper was presented by Alvin Kingsbacher on the manufacture of motor tire fabrics. The article is chiefly historical—that is, there is nothing there that has not previously been exploited. It is, however, an excellent résumé of an important subject.

The "Electrical Review and Western Electrician," December 15, published an important paper on the electric code wiring rules. It is interesting in that the United States procedure is compared with the German and British requirements.

THE SEASON'S GREETINGS.

We acknowledge with appreciation cards and booklets from the following friends in the trade expressing kindly sentiments and holiday greetings, which we most heartily reciprocate: Ajax-Grieb Rubber Co., tire makers, Trenton, New Jersey; the J. H. Day Co., manufacturers of rubber mill machinery, Cincinnati, Ohio; W. H. Miner, of The Miner Rubber Co., Limited, which manufactures rubber footwear, Granby, Quebec; Monatiquot Rubber Works Co., manufacturers of "Naturized" rubber, South Braintree, Massachusetts, and L. J. Mutty Co., manufacturers of rubber cloths and tubing, Boston.

Many other friends in the trade have favored us with calendars, souvenir booklets, etc., all of which will be mentioned in greater detail in the February number.

"RUBBER-RECUEIL."

This is a beautiful souvenir of the International Rubber Congress and Exhibition held in Batavia in October. The papers, which were delivered in Dutch, German, French and English, are printed in those languages and abundantly illustrated. An interesting portion of the booklet is a symposium of planting ideas submitted by the managers of some 80 rubber planting estates, arranged and edited by Mr. L. Lewton-Brain, Director of Agriculture of the Federated Malay States.

For the first time in the history of the crude rubber export, plantation rubber is coming to the United States by way of the Pacific. Shipments from Java are now sent to Hongkong, transferred to the Pacific Mail, and landed at San Francisco.

Some Interesting Letters From Our Readers.

PROPOSAL FOR A DISTRIBUTING AGENCY FOR PARA RUBBER.

THE writer of the following letter is now in New York. He was for many years connected with large rubber export interests in Para. He writes this letter to stimulate the interest of American rubber manufacturers in the prospect of securing their rubber direct.

"Rubber is at present imported to the United States in the following three ways: 1—Bought by contract directly from the few dealers (J. Marques, Pires Teixeira & Co., Pralow & Co., Ferreira d'Oliveira & Sobrinho). 2—Sent by merchants on consignment (dealers and a few *aviadores*). 3—Sent by agents of American houses to their head offices.

"In the first case the American merchant sends a letter of credit which enables the Amazonian dealer to draw the amount of the invoice. In the second case the merchant draws a certain percentage, generally 80 per cent. In the third case the agents have at their disposition certain funds to buy rubber there.

"The *aviadores*—the producer's representatives—daily receive rubber which they sell at the market price of the day as it is set by the dealers. This price, of course, is the consequence of the speculation of the dealer in selling the rubber before he has as yet received it (forward selling). The New York and London markets do not influence Amazonian rubber trade as they ought to. Thus the price offered there is often lower than it is here, and vice-versa. The *aviador* knows nothing of the speculation, and is often obliged to sell the rubber at lower prices than he could get by selling it directly to this market. The reason for this is that he ignores the calculations, which are very complicated and involve the daily changes of duty, freight, exchange, shrinkage and expenses here and there. This naturally requires a special study.

"My proposition is based upon this: We should deal directly with the *aviadores*, instructing them as to the proper calculations and furnishing them with adequate Portuguese codes through which they will be able to accept our offers. Instead of his selling to the dealers in Para he will be able to sell his rubber to the manufacturers through our medium. In fact a few good standing firms from Para which are receiving many thousands of kilos. of rubber monthly have authorized me to make this proposition.

"Of the 40,000 tons of rubber or 88,200,000 pounds which is the yearly Amazonian output, more or less, the United States buys, according to the statistics, about 50 per cent., or say, 44,100,000 pounds of rubber. Let us assume that the *avaidores* will sell 10 per cent. of this quantity through our medium. We will then have 4,410,000 pounds of rubber sold, of different grades.

"The actual price is: Hard fine, 72c.; Soft fine, 65c.; Caucho, 54c.; Upriver coarse, 53c.; Island coarse, 32c.; Cameta coarse, 34c. The average, being 50c. per pound, will make our sales amount to $2,205,000 per year. Taking into consideration that we make 1.5 per cent., half of the Para dealer's profit, and 0.5 per cent. on the New York brokerage, which is 1 per cent., we will be able to make at least 2 per cent. on the $2,205,000, which amounts to $44,000.

"The *aviador* is furnished only with a letter of credit stipulating the conditions as to the correct weight, quality and amount, against which, after the shipment has been made, he draws at 90 days. No capital, consequently, is required for this transaction. The consumer's note when buying is the guarantee for the producer's letter of credit. In other words, the bank will issue a letter of credit against the security of the buyer's note. Sound and reliable firms, of course, are contemplated. Otherwise they would not be able to negotiate their drafts."

OPENING FOR AMERICAN RUBBER GOODS IN LONDON.

THE following is from a London letter, written by a man who has in the past been a solid tire agent but whose source of supply is cut off on account of the war:

"I do not propose to enlarge upon the complete cessation of business between my country and Germany owing to the war, except to say that a magnificent opportunity now presents itself for securing some of the very large business German houses were doing in England in solid and pneumatic tires. I believe they secured 60 per cent. of the trade and their preparations for 1915 were very extensive.

"The salient points for securing British trade are:

"(1) Observance of English mileage guarantees to 10,000 or 12,000 miles.

"(2) Working to English measurements for standard sets. These are now of course rendered principally in millimetres.

"(3) Holding an adequate stock in London.

"Competition is of course very keen, which inevitably tends to reduce prices, but a high quality is demanded and the necessary price for such should not be a difficult matter if backed up with an efficient publicity campaign.

"Prices ruling today are round about £40 to £44 [$19.45 to $21.39] for a set of 6—two 920x120 and four 1,000x100—and £52 to £55 [25.30 to $26.77] for two 880x120 and four 1,010x120, and so on; manufacturers paying the cost of fitting, which amounts to about 30*s.* [$7.30] per set.

"I am merely giving these figures in order that if the proposal interests any of your manufacturers they may have some data upon which to figure out the success of a proposed attempt.

"Then there are the other branches of the rubber trade, such as mechanicals, hose, surgical goods—all of which are in great demand."

FROM HAMBURG.

AN important German rubber firm writes us under date of December 8:

"In the first half of the year business was not bad, without deserving to be called good. An extensive over-speculation in sites and buildings had caused this branch of economic life to suffer acutely, and had damped the spirit of enterprise. This fact to a certain extent affected other branches of industry.

"The war has naturally caused a great revolution in business life; but as the fighting is going on in the enemies' countries, a feeling of confidence prevails in all circles. The degree in which German industry is occupied varies considerably. All factories having directly or indirectly to do with deliveries for the army or navy are fully engaged and working in many cases with an increased force day and night. Those factories, however, which make objects of luxury and those principally devoted to export trade have had to limit their operations, but only in isolated cases has there been a complete stoppage of the plant.

"Moreover, the German rubber industry is now heavily engaged in war supplies, thousands of power vehicles being occupied for the army and having extensive requirements in pneumatic tires. Countless large and small articles in soft and hard rubber are wanted for ships, engineering troops' appliances and hospital purposes. But even in our industry the want of export orders is noticeable, the situation being accentuated by the export pro-

hibition recently issued by the government, which must be regarded as a retaliation for the English declaration of rubber as contraband. The step has been taken in the interest of the permanent readiness of the army, and is intelligible, as with the present supplies of crude rubber, although of themselves not unimportant, which were increased by large quantities from Antwerp, economy must be observed. Of late, all rubber with dealers and manufacturers has been attached, with the liberty to use it only for the necessary requirements, which are indicated in detail. The number of workers must, therefore, now be restricted, and we would be inclined to believe that the average production of the factories will not exceed one-third of that in times of peace.

"We have also been obliged to limit our operations. The workmen taken for the army, about one-fifth of our staff, have not been replaced, and the working time has been reduced to about four days a week. With any restriction, the workmen always earn enough to be able to live without anxiety. Under these circumstances, the rubber in the country will suffice for a very long time.

"Sufficient provision has been made for the families of the workmen drafted to the field, by the factory management and the state funds. Moreover, state and municipalities provide remunerative occupation for all the unemployed, on public buildings, railways, highway and canal works; and the expenditure of large sums is projected to support the industries most affected by stock orders for the public departments. It is distinctly stipulated that the necessity will not be utilized for the reduction of wages."

PRIZES AT THE BATAVIA RUBBER EXHIBITION.

POSTPONED by reason of the war, the Rubber Exhibition was opened at Batavia on October 19 by His Excellency the Governor-General of Netherlands India, supported by General (retired) De Voogt and other officials, including Heer Ottolander, president of the Agricultural Syndicate of Netherlands India and Heer Van Rijmberk, of Singapore.

The prizes awarded included:

THE INDIA RUBBER WORLD cup: To the Belgian Ministry of the Colonies; for the most complete exhibit referring to wild rubber. (Cup illustrated and described in issue of June, 1914, page 510.)

THE JURY cup: To the Holland-American Plantation Co.; for a display of models of hospitals and coolies' dwellings meeting sanitary and aesthetic requirements.

THE BATAVIA, 1914, cup: To the mountain section of the Association for the Promotion of Agriculture and Industry at Djember, and the Bezoekisch Testing Station; for the most complete exhibit referring to the cultivation of *Hevea Brasiliensis*.

THE SOERABAYA HANDELSBLAD cup: To the firm of Francis Peek & Co.; for the most complete collection from Netherlands India referring to *Hevea Brasiliensis*.

THE WEST JAVA RUBBER PLANTERS' cup: To the firm of Harrisons & Crossfield; for the most complete exhibit referring to machinery.

THE OTTOLANDER cup: To the collective exhibit of the Department of Agriculture, Industry and Commerce.

Full reports of the congress and exhibition are expected at an early date, also the results of further competitions.

A prominent feature of the congress was the demonstration by Heer Fol, assistant director of the Delft (Holland) Laboratory, of the different methods of rubber testing. A committee was appointed to establish a new testing station in Java, in which the Bridge installation (demonstrated by Heer Fol) would be employed. The proposal has received the support of several of the largest rubber culture associations.

During the time of the congress various interesting papers were read, including those of Mr. Birnie on "Catch Crops and Intermediate Cultures"; Heer C. M. Hamaker, on "Planting Distances and Thinning Out"; Dr. Cramer, on the "Selection of *Hevea*"; Dr. Rutgers, on "Insects and Diseases of *Hevea*"; Dr. A. W. E. de Jong, on "Tapping and Tapping Systems," and Dr. A. J. Ultée, on "The Preparation of Rubber." A discussion on the "Cost Price of Rubber" was opened by Mr. Birnie.

RUBBER TRADE INQUIRIES.

[100] A manufacturer of nipples, comforters, etc., wishes to get in touch with firms supplying bone rings or aluminum rings and plates, etc.

[101] An exporting house is in the market for "Sakol" rubber cement and desires to learn name of the manufacturer.

[102] A rubber toy manufacturer wants names of concerns making whistles that can be incorporated in this class of article, and that can be blown by pressure of the rubber toy.

[103] Requests have been received for names of manufacturers of gutta percha tissue.

[104] Another inquiry—from the rubber chemical industry—is for "Carbonilid."

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A commission house desires to communicate with American manufacturers of hospital supplies, such as rubber tubes and sponges, etc. Correspondence should be in French or Portuguese. Report No. 14,908.

A commission firm in the Near East desires American agencies for rubber shoes, etc. Report No. 14,912.

An old established tobacco pipe manufacturer in Great Britain desires to purchase vulcanite mouthpieces from the United States. A sample mouthpiece may be inspected at the Bureau of Foreign and Domestic Commerce or its branch offices. Report No. 14,917.

A RUBBER COMPANY IN THE MARKET FOR MACHINERY AND SUPPLIES.

The Southern Rubber Products Co., 624-6 South Third avenue, Louisville, Kentucky, is equipping a plant for the manufacture of inner tubes and rubber specialties. This plant will have a capacity at the start of 400 tubes a day. The company is in the market for machinery and also for samples and quotations on rubber and chemicals used in this line of manufacture. It was recently incorporated, with a capital stock of $25,000.

SEALING MACHINE WITH RUBBER ROLLERS.

Where there is a single envelope to be sealed it is not a matter of vital importance as to how it is done—the time-honored method of using the tongue is quite satisfactory, if that method is to one's taste. But where there are a thousand envelopes to be sealed some other method must be pursued. Various sealing devices have been put on the market, some good and some not so good. Here is one that works by electricity, and it is mentioned here because an important part of its construction consists of five rubber rollers. Two of them are shown in the accompanying illustration, at the top of the machine, just back of the large wheel. The envelope is first placed between a rubber roller and a wheel with a moistened edge which wets the mucilage on the flap. The envelope is then carried on between two pairs of rubber rollers, which effectually seal it. Both machine and tray are equipped with rubber feet so as not to scratch the desk or table. [Sealograph Company, Kansas City, Missouri.]

Official India Rubber Statistics for the United States.

IMPORTS OF RUBBER AND MANUFACTURES OF.

ARTICLES.	October 1913. Quantity.	October 1913. Value.	October 1914. Quantity.	October 1914. Value.	Ten Months Ending October 1912. Quantity.	Ten Months Ending October 1912. Value.	Ten Months Ending October 1913. Quantity.	Ten Months Ending October 1913. Value.	Ten Months Ending October 1914. Quantity.	Ten Months Ending October 1914. Value.
India rubber, etc., and substitutes for, and manufacturers of:										
Unmanufactured—										
Balata .....*pounds..free*	90,433	$44,537	381,708	$133,633	$21,217	$515,129	1,083,634	$579,102	1,478,850	$694,681
Guayule gum.....	166,424	62,811	226,995	65,139	10,682,471	4,738,104	4,832,222	2,106,624	1,302,671	505,401
Gutta-jelutong.....	2,074,445	91,513	545,612	28,351	42,372,140	1,957,824	34,531,603	1,669,593	17,471,331	806,189
Gutta-percha	322,719	26,666	40,998	7,671	638,295	146,288	703,850	154,728	1,798,516	314,674
India rubber.....	8,478,376	4,585,074	12,883,687	5,836,645	97,308,544	82,391,075	95,626,118	66,237,855	119,227,855	59,816,727
India rubber scrap or refuse, fit only for remanufacture	1,788,409	132,770	967,994	63,143	29,574,820	2,446,019	33,534,559	2,927,205	17,504,670	1,254,104
Total unmanufactured.	.....	$4,943,371	.....	$6,134,582	.....	$92,194,439	.....	$73,675,107	.....	$63,391,776
Manufactures of—										
Gutta-percha .....*dutiable*	.....	$12,172	.....	$344	.....	$76,199	.....	$29,400	.....	$19,945
India rubber ..... "	.....	122,417	.....	70,226	.....	914,954	.....	1,022,930	.....	1,242,234
Total manufactures of.	.....	$134,589	.....	$70,570	.....	$991,153	.....	$1,052,330	.....	$1,262,179
Substitutes, elasticon and similar ....*dutiable*	.....	$5,330	.....	$3,160	.....	$75,753	.....	$82,894	.....	$59,778

IMPORTS OF CRUDE RUBBER BY COUNTRIES.

From:										
Belgium .....*pounds*	411,212	$220,917	.....	.....	4,881,463	$4,934,921	5,251,097	$4,042,613	9,018,596	$5,028,504
France	474,439	193,811	167,805	$55,400	3,163,639	2,957,583	2,224,137	1,570,380	2,107,247	899,281
Germany	463,294	225,599	.....	.....	7,462,069	5,910,108	6,034,468	3,789,827	4,631,589	2,336,218
Portugal	.....	.....	203,100	54,103	1,447,243	999,874	322,063	238,636	1,092,579	328,161
United Kingdom	2,923,166	1,904,600	6,017,180	2,918,701	27,078,796	28,586,288	32,240,015	26,880,348	44,405,211	25,791,043
Central American States and British Honduras.....	50,566	29,106	42,611	13,153	1,074,389	787,989	757,444	478,265	425,018	199,509
Mexico	33,145	20,144	274,332	92,623	2,196,215	1,551,719	1,408,143	882,798	785,644	340,063
Brazil	2,808,824	1,217,226	3,838,532	1,557,385	40,326,869	27,196,272	33,790,530	17,191,640	35,378,894	13,797,258
Other South America.....	73,217	32,664	49,208	32,546	2,315,709	1,745,525	1,209,064	747,255	1,917,963	759,821
East Indies	1,148,989	699,181	2,290,012	1,112,160	6,828,405	7,163,413	11,719,409	9,958,071	17,783,823	9,402,059
Other countries	91,524	41,826	907	574	533,747	557,383	669,748	458,022	1,681,291	934,810
Total	8,478,376	$4,585,074	12,883,687	$5,836,645	97,308,544	$82,391,075	95,626,118	$66,237,855	119,227,855	$59,816,727

EXPORTS OF AMERICAN RUBBER GOODS.

India rubber, manufactures of										
Scrap and old.....*pounds*	322,543	$45,013	70,774	$5,731	5,936,037	$699,007	4,906,970	$672,261	4,056,071	$393,737
Reclaimed	422,120	73,593	459,201	65,926	4,434,596	758,139	4,278,005	721,549	5,105,728	720,518
Belting, hose and packing...	.....	265,798	.....	176,279	.....	2,125,333	.....	2,157,583	.....	1,823,740
Boots and shoes—					[1]850,025	[1]512,881	.....	.....	.....	.....
Boots .....*pairs*	9,385	28,168	75,219	182,977	[2]28,153	[2]83,436	96,730	235,296	155,187	388,411
Shoes	229,760	108,672	182,500	98,481	[2]1,056,418	[2]552,399	1,741,182	884,497	1,048,109	562,951
Tires—										
For automobiles.....	.....	237,116	.....	247,559	.....	2,759,339	.....	3,481,131	.....	2,803,912
All other	.....	75,207	.....	35,159	.....	485,908	.....	504,875	.....	388,403
All other manufactures of..	.....	330,962	.....	219,723	.....	3,378,087	.....	3,203,394	.....	2,505,508
Total	.....	$1,164,529	.....	$1,031,835	.....	$11,354,529	.....	$11,860,586	.....	$9,587,180

EXPORTS OF AUTOMOBILE TIRES BY COUNTRIES.

India rubber, manufactures of: Tires for automobiles—										
Belgium	.....	$180	.....	.....	.....	$318,474	.....	$98,949	.....	$301
Germany	.....	3,238	.....	.....	.....	1,258	.....	425,773	.....	81,917
England	.....	68,135	.....	$103,894	.....	986,309	.....	1,198,419	.....	1,174,955
Canada	.....	79,606	.....	37,093	.....	951,944	.....	1,057,285	.....	833,065
Mexico	.....	19,965	.....	9,792	.....	179,223	.....	133,663	.....	59,957
Philippine Islands	.....	9,418	.....	31,735	.....	58,639	.....	111,257	.....	124,310
Other countries	.....	56,574	.....	65,045	.....	263,492	.....	455,785	.....	529,407
Total	.....	$237,116	.....	$247,559	.....	$2,759,339	.....	$3,481,131	.....	$2,803,912

EXPORTS OF FOREIGN MERCHANDISE.

	October 1913. Quantity.	October 1913. Value.	October 1914. Quantity.	October 1914. Value.	Ten Months Ending October 1913. Quantity.	Ten Months Ending October 1913. Value.	Ten Months Ending October 1914. Quantity.	Ten Months Ending October 1914. Value.
India rubber, etc., and substitutes for, and manufactures of:								
Unmanufactured—								
Balata .....*pounds free*	6,073	$2,600	166,066	$72,146	81,287	$49,611	367,656	$180,863
Guayule gum	.....	.....	.....	.....	39,299	24,626	2,250	1,058
Gutta-jelutong	32,000	2,000	.....	.....	35,000	2,163	.....	.....
Gutta-percha	.....	.....	.....	.....	22,337	2,652	11,163	5,653
India rubber	296,863	188,290	551,093	295,046	3,770,885	3,045,156	4,106,163	2,331,457
India rubber scrap or refuse, fit only for remanufacture	.....	.....	.....	.....	101,309	12,153	324	8
Total unmanufactured	.....	$192,890	.....	$367,192	.....	$3,136,361	.....	$2,519,039
Manufactures of—								
Gutta-percha .....*dutiable*	.....	.....	.....	.....	.....	$13,980	.....	.....
India rubber	.....	$241	.....	$783	.....	9,601	.....	4,122
Substitutes, elasticon and similar.....	.....	.....	.....	.....	.....	$559	.....	.....

[1] Figures are for 6 months, January to June, inclusive.
[2] Figures cover period since June 30.

Twenty-Fifth Anniversary Congratulations.

[THE INDIA RUBBER WORLD *passed its twenty-fifth birthday last October. It was the plan of the Editor to have a special jubilee number to mark the event. With the great war on, entailing disaster and suffering and involving hundreds of friends in England, France, Germany, Austria, Russia and Belgium, we had no heart to rejoice. The event has therefore been marked only by the publication of the following letters of congratulation—letters of which we are exceedingly proud.—The Editor.*]

"EMINENTLY FAIR AND A VERY REAL HELP."

[From the UNITED STATES RUBBER CO.—President's Office.]

I understand that THE INDIA RUBBER WORLD is approaching its 25th birthday under your leadership, during all of which time it has been my pleasure to watch its growth and strength, as well as to count you among my personal friends. I have always felt that the aim of the paper was high, eminently fair, and a very real help to the rubber industry.

Please accept congratulations of myself and my associates, and best wishes for continued success.

[Signed] SAMUEL P. COLT [*President*].

"A CYCLOPEDIA OF SCIENTIFIC AND PRACTICAL INFORMATION."

[From the APSLEY RUBBER CO., manufacturers, Hudson, Massachusetts.]

I wish to add my congratulations to those of the large number of friends you have made during your long and exceedingly useful career as founder and editor of the best india rubber journal in the world.

In the 25 years of the existence of THE INDIA RUBBER WORLD you, as its editor, during that entire period, have presented to its readers a vast amount of information regarding the production, treatment and products of india rubber, which you, personally, have gathered in all parts of the world; so that your journal has become a cyclopedia of scientific and practical information upon this interesting subject.

For the good of the rubber business, I trust that you will continue to be the controlling spirit of THE INDIA RUBBER WORLD for many more years.

[Signed] L. D. APSLEY, [*President.*]

CONGRATULATIONS ON "LES NOCES D'ARGENT."

[From MICHELIN & CIE, manufacturers, Clermont-Ferrand, France.]

I heartily congratulate you on the 25th birthday of THE INDIA RUBBER WORLD.

In France, when a man and wife celebrate the 25th anniversary of their marriage, we call it "les noces d'argent."

Allow me to congratulate the happy husband of the beautiful and faithful wife, THE INDIA RUBBER WORLD.

[Signed] EDOUARD MICHELIN [*Director*].

"THE READING OF ITS PAGES A DELIGHTFUL PASTIME."

[From the COMMISSIONER OF THE IMPERIAL DEPARTMENT OF AGRICULTURE FOR THE WEST INDIES.]

I assuredly must congratulate both you and THE INDIA RUBBER WORLD on your long and successful connection.

From my own point of view I am particularly impressed with the very interesting work you have been able to place on record as the result of world-wide personal travel to practically every country where rubber is grown and to many where rubber-growing is only a proposition for the future. In these travels you have investigated the various rubber plants themselves and have helped to unravel some of the botanical problems they present, at the same time you have been able to form a shrewd opinion as to the commercial possibilities of rubber production in the countries you have visited.

I would congratulate you, too, on the manner in which your observations have been presented to your readers; while the information has been useful and accurate, the quaintly humorous vein running through your articles has made the reading of those pages of a technical journal a delightful pastime.

I have also to express my high appreciation of the journal in its general bearing on rubber and rubber topics and wish both you and it long life and prosperity.

[Signed] FRANCIS WATTS [*Commissioner of Agriculture for the West Indies*].

HAS KEPT CONSTANT PACE WITH THE RUBBER INDUSTRY.

[From PIRELLI & CO., manufacturers, Milan, Italy.]

I understand that THE INDIA RUBBER WORLD is on the point of celebrating its 25th birthday and beg to send my heartiest congratulations to yourself personally and to your newspaper.

You have achieved a remarkable task by keeping constant pace during this long period with the wonderful strides that the rubber industry has made in connection both with its sources of supply as with the growth of old and the development of new appliances.

I join with pleasure in what I think must be the general acknowledgment of this fact.

[Signed] A. PIRELLI [*Director*].

THROUGH THE EDITOR'S LETTERS REALIZED PLANTATION POSSIBILITIES.

[From THE WATERHOUSE CO., LIMITED, rubber factors, Honolulu, T. H.]

I wish to congratulate you and THE INDIA RUBBER WORLD on your quarter-century birthday, as it is a rare event in newspaperdom for a periodical to round out the first quarter of a century with the same editor at the helm.

I and my associates were first interested in THE INDIA RUBBER WORLD through the series of interesting letters published by you of your trip through Ceylon and the Federated Malay States in 1905; and it was through these that we realized the possibilities of investments in rubber plantations in that part of the world.

THE INDIA RUBBER WORLD has been on our table ever since and is looked forward to with interest each month.

[Signed] ALBERT WATERHOUSE [*President*].

"ABLE, INSTRUCTIVE AND INTERESTING."

[From the HODGMAN RUBBER CO., manufacturers, New York.]

It has recently come to my notice that THE INDIA RUBBER WORLD is about to celebrate its 25th birthday, and I want to extend to you my congratulations.

I very well remember the time when your journal was started, and if I recollect right our company was among the first to take advertising space. THE INDIA RUBBER WORLD has certainly kept pace with the great advance in the last quarter of a century of the rubber industry in the United States, and we are fortunate in having as a trade organ one that is as able, instructive, and interesting as yours. May your success continue.

[Signed] G. B. HODGMAN, [*President.*]

"REGARDED AS VITAL AND VERY USEFUL IN EUROPE."

[From THE NORTH BRITISH RUBBER CO., LIMITED, Edinburgh, Scotland.]

I learn with much interest that THE INDIA RUBBER WORLD is to celebrate its 25th anniversary this year.

Pray accept my congratulations, both for yourself and your valued periodical, which in Europe as in America has come to be regarded as a vital and very useful part of the rubber industry.

Although we are in the midst of war and European complications, we have still time to remember with pleasure our long

association with yourself and THE INDIA RUBBER WORLD, and our best wishes are with you for long life and continued prosperity.

[Signed] ALEXANDER JOHNSTON, *General Manager.*

A CONSTANT READER FOR 22 YEARS.

[From VEREINIGTE BERLIN-FRANKFURTER GUMMIWAREN-FABRIKEN, Berlin-Lichterfelde, Germany.]

For 22 years I have been a constant reader of THE INDIA RUBBER WORLD and dare say that I may be a competent judge of the marvelous, steady progress your journal has taken during this period. Success in life to my experience is not a matter of hazard, but mainly due to honest, steadfast work, with a strong will to succeed. Both these qualities have been harmoniously concentrated in your person, and that accounts for the brilliant development THE INDIA RUBBER WORLD has taken under your guidance and has made it the leading journal of the branch. I heartily beg to present you my best compliments on your jubilee day.

[Signed] EMIL SPANNAGEL, [*Manager.*]

"AN INFLUENTIAL, RELIABLE AND BROAD MINDED TRADE JOURNAL."

[From WM. M. IVINS, former President of the General Rubber Co.]

A slight jog to my memory recalls the fact that your INDIA RUBBER WORLD, as I now well recollect, began its career some quarter of a century ago. I sincerely congratulate you on the fact that it is about to celebrate its 25th birthday, but far more than this upon the fact that you have made it one of the most influential, reliable and broad-minded trade journals in the world.

[Signed] WM. M. IVINS.

"A VERITABLE ENCYCLOPEDIA."

[From J. SIMAO DA COSTA, prominent Brazilian rubber authority.]

I can recall the moment I had the pleasure of reading the first number of THE INDIA RUBBER WORLD, which you had the courage to found and publish, as its responsible editor, 25 years ago. The rubber industry was then still in its infancy. I believe I have read almost every number you have published since then.

It is not for me to judge as to the exact measure of your ambitions when you founded THE INDIA RUBBER WORLD, but I am able to judge of its success, such as you have made it both literary and commercially, holding, as it does, the premier position among the publications of its class all the world over. I believe I voice the opinion of all readers of your journal when I say that, in its particular sphere and literary domain, it has influenced and contributed, in no small degree, towards the building of the rubber industries of America, and raised them to their present state of prosperous affluence.

To accomplish all of this in the way you have done, by presenting monthly to your readers a light, interesting, enlightened, progressive, readable magazine, so thoroughly comprehensive as to constitute a veritable encyclopedia of all that pertains to this particular trade, is no mean task; but you have succeeded in accomplishing it, with distinction. But you have done more yet. You have also published standard technical books of no mean value, and have ransacked the tropical regions of both hemispheres so as to give your readers a graphic idea of the people and surroundings wherein rubber is gathered and prepared for market.

For all of this, I am of opinion that the rubber industries in general, and in particular those of America, are deeply indebted to you, and you are deserving of the highest tribute for all you have done. For my part, and in the name of Pará, I tender you my sincere congratulations for having devoted twenty-five years' enterprise to an industrial publication, and for having raised it to the highest place it could have reached all the world over.

Here in Pará we have already had the opportunity of showing you our appreciation for you, personally, and as leading light of your magazine. And I venture to say that in spite of the hard times we are traversing, you would be just as cordially fêted again today if you were to visit us once more.

And now one simple personal remark. I do not envy your successful career as the editor of THE INDIA RUBBER WORLD, but I certainly envy that light gait, active spring of your step, and congenial disposition, which make you look like a youth of forty. And right here I must stop, as I do not wish to give your age away and run the risk of your immediate retaliation. Let us be boys, in spite of our grey hairs.

May God bless and keep you, are my sincere wishes for you and yours.

[Signed] J. SIMAO DA COSTA.

"THE MOST IMPORTANT FORCE IN RUBBER TODAY."

Not often does it fall to the lot of one man to conduct so important a journal as THE INDIA RUBBER WORLD for twenty-five years, and it gives me much pleasure, as an humble student of one of the most ill-understood products of daily use, to congratulate you on the successful manner in which you have carried on the journal, making it perhaps the most important force in rubber today.

[Signed] JOHN C. WILLIS,
Director do Jardin Botanico, Rio de Janeiro, formerly Director of the Royal Botanic Gardens, Ceylon.

"NO RUBBER MANUFACTURER WOULD BE WITHOUT IT."

[From the MECHANICAL FABRIC CO., Providence, Rhode Island.]

I have known THE INDIA RUBBER WORLD and your esteemed editor, Mr. Henry C. Pearson, for almost the life of the paper. It began in a modest way, but it was indispensable from the start on account of the attractive personality of Mr. Pearson and the confidence he so quickly won with the trade, together with the excellent paper he produced. No rubber manufacturer here or abroad would think of being without it. I was fairly young and inexperienced when I first met Mr. Pearson, but I found myself confiding in him very soon, and never knew him to betray my confidence or that of any one else.

There have been indeed great changes since THE INDIA RUBBER WORLD was started. With the exception of three or four, all of my associates are dead, and I am dictating this letter from a bed of sickness.

[Signed] A. L. KELLEY, *President.*

"READ IT FOR 25 YEARS, ALWAYS WITH GREATEST PLEASURE."

[From RENÉ BOBET, consulting rubber engineer, Paris, France.]

You are about to celebrate the 25th anniversary of the foundation of your estimable journal, THE INDIA RUBBER WORLD. Permit me on this occasion to send you my hearty congratulations, with my best wishes for your prosperity. You will find my name on your books, among the subscribers from the first. I therefore assisted at the birth of your journal, which I have read for the last 25 years; always with the greatest pleasure. I have remarked how, thanks to your efforts, and the constant improvements you have made in all the details of editing, you have placed THE INDIA RUBBER WORLD in the first rank of similar journals throughout the entire world.

The whole of the rubber industry ought to appreciate your efforts thus crowned with success and to congratulate you on your work.

All honor to THE INDIA RUBBER WORLD and to its eminent director, Henry C. Pearson.

[Signed] R. BOBET.

"SUCCESSFUL WORK IN BEHALF OF THE RUBBER INDUSTRY."

[From the BOSTON BELTING CO., manufacturers, Boston, Massachusetts.]

Until the advent of THE INDIA RUBBER WORLD the rubber industry in the United States had no trade journal worthy of the name. The way in which your publication has grown in size, influence and amount of advertising patronage during the past 25 years is certainly a fitting and well merited recognition of your journal and its able and accomplished editor. There are

few publications in any field where the personality of the editor and publisher are so closely identified with the industry it serves as is the case of THE INDIA RUBBER WORLD and yourself. It is extremely rare for such a happy combination to continue for the rather remarkable period of 25 years.

In extending upon your silver anniversary my congratulations upon what you have accomplished, please also accept my best wishes for many more years of successful work in behalf of the rubber industry. With assurances of my best personal regards.

[Signed] THOMAS A. FORSYTH, *President.*

"ITS STERLING QUALITIES, ITS INDEPENDENCE AND IMPARTIALITY."

[From PHILIP SCHIDROWITZ, rubber chemist, London, England.]

In these horrific times of war and destruction the contemplation of any event representing the arts and crafts of peace, the best that man's energy, intellect and resource can accomplish in the furtherance of humanity's well being, is as an oasis in a vast and dreary desert.

The 25th birthday of THE INDIA RUBBER WORLD calls for something more than conventional congratulation; it calls for sincere felicitation and gratitude from all those who, like myself, have watched its progress, its success, and who have benefited from its sterling qualities as a journal, from its independence and impartiality. It is, I believe, a rare event for an editor to have founded and successfully conducted a great journal for a quarter of a century without a break. While congratulating you on the past, I hope that you may continue for very many years at the helm of a barque which has become a valuable asset to all of us who are interested in the rubber industry.

[Signed] PHILIP SCHIDROWITZ.

"ITS MARKEDLY USEFUL AND SUCCESSFUL CAREER."

[From the DAVOL RUBBER CO., manufacturers, Providence, Rhode Island.]

Upon the occasion of the celebration of the 25th anniversary of the birth of THE INDIA RUBBER WORLD, I beg leave to offer you, as its founder and Editor in Chief for the full quarter century of its markedly useful and successful career, the sincerest congratulations of this company and heartiest personal good wishes for its continued growth and prosperity.

[Signed] CHAS. J. DAVOL, *President and Treasurer.*

CONGRATULATIONS FROM GERMANY.

[From DR. HEINR. TRAUN & SÖHNE, Hamburg, Germany.]

We learn that you are celebrating the 25th birthday of your esteemed paper and wish to express to you our heartiest congratulations for that happy event.

We are quite aware that the prosperous development of THE INDIA RUBBER WORLD, in which we found always plenty of interesting stuff for ourselves, is in the first place due to the constant and intelligent labor of the editor, Mr. Henry C. Pearson, and we therefore hope very sincerely that he may be on his place for many years to come.

[Signed] H. OTTO TRAUN.

"OF GREAT VALUE TO THE RUBBER TRADE."

[From the E. H. CLAPP RUBBER CO., reclaimers, Boston, Massachusetts.]

We wish to extend our heartiest congratulations both to THE INDIA RUBBER WORLD and its editor, on the occasion of its 25th birthday. It gives us special pleasure to do this and we feel that THE INDIA RUBBER WORLD for 25 years under your editorship has been of great value to the rubber trade, in that we have always found that its news was reliable news.

The writer also wishes to extend his personal congratulations to you for the smiling and genial way you have always had of trying to make your friends enjoy life; also for your work in bringing the different rubber men into social intercourse so that they could find out what a good fellow the other man was.

[Signed] E. H. CLAPP, *Treasurer.*

GOOD WISHES FROM ENGLAND.

[From CHAS. MACINTOSH & CO., LIMITED, manufacturers, Manchester.]

We heartily congratulate you, THE INDIA RUBBER WORLD's original and present editor, and trust that you and your excellent paper may continue to enlighten the india rubber world for many years to come.

[Signed] R. K. BIRLEY, *Director.*

READ "REGULARLY AND SYSTEMATICALLY" IN CANADA.

[From THE MINER RUBBER CO., LIMITED, manufacturers, Granby, Quebec.]

During the writer's comparatively short connection with the rubber business, he has found THE INDIA RUBBER WORLD of great assistance to himself and to our staff in keeping us posted as to the doings of that part of the business world upon which we are depending for our supplies of the wherewithal to make good rubbers. But going back even farther than this, when the writer was a comparative youngster, he remembers very well the great interest the late Mr. S. H. C. Miner, the founder of our business, took in your publication, and how regularly and systematically he looked forward to reading it and how much he missed it, whenever, through some slip in our postal department, its arrival was delayed.

We trust that the success which has attended your publication during the past 25 years will be more than doubled in the future.

[Signed] W. H. MINER, *General Manager.*

"OCCUPIES AN ENVIABLE POSITION."

[From the FARREL FOUNDRY & MACHINE CO., Ansonia, Connecticut.]

Having learned that THE INDIA RUBBER WORLD is to celebrate its 25th anniversary, we take this opportunity to congratulate you upon its success. We well remember when you first resolved to bring out a paper to be devoted to the interests of the rubber business, and your optimistic views of the future of this branch of business. It took some courage at that time to make the venture, and you may well take pride in its success. THE INDIA RUBBER WORLD occupies an enviable position among the trade journals, and has kept apace, we believe, with the remarkable development of the rubber business.

With best wishes for your continued success,

[Signed] FRANK E. HOADLEY, *Secretary.*

"ADDED IMMEASURABLY TO MAN'S KNOWLEDGE CONCERNING RUBBER."

[From the STANDARD ASPHALT & RUBBER CO., New York.]

I am glad I am here yet to congratulate you on the 25th anniversary of the advent of THE INDIA RUBBER WORLD.

You have certainly achieved a great success, and sometimes it is a question in my mind whether the WORLD grew up with the rubber business, or whether the rubber business grew up with the WORLD.

Anyhow, you have reason to be proud of your life's work, and can truly felicitate yourself, as having in 25 years added immeasurably to the sum of man's knowledge concerning india rubber.

May you "live long and prosper."

[Signed] GEO. WATKINSON.

"AN AUTHORITY ON ALL MATTERS PERTAINING TO RUBBER."

[From the BOWERS RUBBER WORKS, manufacturers, San Francisco.]

The Bowers Rubber Works and many of its employes, who read your interesting journal, wish to most heartily congratulate you on the happy event that marks the 25th anniversary of the publication of THE INDIA RUBBER WORLD. Your paper is looked for and consulted as an authority on all matters pertaining to rubber.

I am sure that the splendid success already attained will continue a very long time, and, as for you personally, may your years be as many as your friends are numerous.

[Signed] W. F. BOWERS, *President.*

News of the American Rubber Trade.

THE ADAMSON MACHINE CO. STILL GROWING.

THE Adamson Machine Co., of Akron, Ohio, was started in 1892 by Alexander Adamson. Fourteen years later it was incorporated. The company's plant has been increased steadily from time to time. Five years ago it built an entirely new plant, with a floor area of 45,000 square feet. Since that time this has been increased considerably over 100 per cent., so that its floor area now amounts to 110,000 square feet, and with the addition now building 135,000 square feet.

THE UNITED STATES TIRE CO. CONCENTRATES ITS WORK.

The United States Tire Co. was formed in 1911 to market four of the best known brands of tires, namely: Morgan & Wright, made at Detroit; the Hartford, made at Hartford, Connecticut; the G. & J., made in Indianapolis, and the Continental, made by the Revere Rubber Co., Providence, Rhode Island. For about a year these tires were sold under their individual names. Then the four brands were eliminated, or at least subordinated, and all the tires were sold under the general brand, United States Tire Co. Now in order to manufacture with greater economy and better facilities for specialization, the company intends to concentrate the manufacture of automobile tires in two of its plants, namely, those at Hartford and Detroit, while all its bicycle and motorcycle tires will be made at the Indianapolis plant and the solid tires, for motor trucks, carriages and other vehicles, will be manufactured in the Revere plant at Providence.

NO INCREASE IN PIANO TUBING PRICES.

The Chicago correspondence which appeared in a recent number of this publication spoke of the advance in the price of rubber tubing for player-pianos. Such an advance took place soon after the outbreak of the war and the phenomenal rise in crude rubber prices, but in some cases the prices for tubing have been restored to their original figure. The L. J. Mutty Co., of Boston, for instance, advanced its price for piano rubber tubing 10 per cent. early in the fall, but reduced the figure again to the original price on the first of November; and all its customers who had contracts were fully protected during the period covered by the advance. No increase in price was made in its line of rubber coated cloths.

RUBBER COMPANY DIVIDENDS.

The Board of Directors of the Rubber Goods Manufacturing Co. on December 2 declared a sixty-third regular quarterly dividend of 1¾ per cent. on the preferred stock of the company, and a dividend of 1 per cent. on the common stock—both payable December 15 to stockholders of record on December 10.

The Kelly-Springfield Tire Co. has declared quarterly dividends of 1½ per cent. on the 6 per cent. preferred stock of the company and 1¾ per cent. on the 7 per cent. preferred stock—payable January 2 to stockholders of record on December 15; also a dividend of 1½ per cent. on common stock, payable February 1 to stockholders of record on January 15. This is the first dividend declared by the company on its common stock, which two years ago sold at 15 and is now in the neighborhood of 70.

The Converse Rubber Shoe Co., of Malden, Massachusetts, on December 1 paid a regular semi-annual dividend of 3½ per cent. on preferred stock to stockholders of record on November 25.

The Firestone Tire & Rubber Co., of Akron, Ohio, has declared a quarterly dividend of 1¾ per cent. on its preferred stock and a dividend of 3 per cent. on common stock, payable January 15 to stockholders of record on December 31.

The Apsley Rubber Co., of Hudson, Massachusetts, has declared a regular semi-annual dividend of 3½ per cent., payable January 1 to stockholders of record on December 28.

TRADE NEWS NOTES.

Beginning January 1, the Boston Woven Hose & Rubber Co., at its plant in Cambridge, Massachusetts, will reduce the working hours of all employes in its factory from a 10 and 11 to a nine hour basis per day. This reduction in hours will not mean a reduction in wages to the operatives, as they will receive the same total wage per week for the shorter hours that they have heretofore received.

The Keystone Rubber Manufacturing Co. has built a $50,000 addition to its plant at Erie, Pennsylvania, increasing its capacity about four times. The company intends to make a specialty of red and gray inner tubes.

The L. J. Mutty Co., which manufactures rubber fabrics and tubing, has moved its executive offices from 93 Federal street to 175 Congress street, Boston.

The St. Louis branch of Fisk Rubber Co., of Chicopee Falls, Massachusetts, will remove about April 1 from its present quarters at 3917 Olive street, to the 2-story and basement fireproof building now under erection at 2206 Locust street, on which a long time lease has been taken.

The American Rubber Fabric Co. has under way a 6-story fireproof concrete addition to its plant at Pittsburgh, which, when new machinery is installed, the company states will constitute one of the best equipped rubberizing plants in the country. This company produces a line of rubber hospital sheeting, raincoat cloth, automobile top cloth and many other rubberized fabrics.

The tire tread and repair stock, cement, etc., of the Stoddard Rubber Co., of Worcester and Millville, Massachusetts, is now on sale in New York City, by the Stoddard Rubber & Tire Co., of 177 Broadway.

The Marathon Tire & Rubber Co., of Cuyahoga Falls, Ohio, in a letter recently received, states that arrangements have been made by which Marathon tires will be made in Canada by a firm at St. Catharines, Ontario, under the trade name and subject to the supervision of the Marathon company. The erection of a plant there has been abandoned for the present.

The Detroit Insulated Wire Co., of Detroit, Michigan, has increased its capital stock from $100,000 to an authorized issue of $500,000, of which on December 4 $250,000 was outstanding. Its manufacturing facilities are being improved and increased, and new buildings and machinery provided.

The Searle Unburstable Inner Tube Co. has been incorporated in New York, with a capital stock of $400,000, to manufacture the Searle automobile inner tube. The incorporators are Orson Kilborn, Frederick H. Hall and J. Campbell Thompson, all of New York.

The Wellington Rubber Co., of Medford, Massachusetts, was petitioned into bankruptcy on December 15, with liabilities amounting to $100,941, and assets $43,754.

The East Palestine Rubber Co. has moved its executive offices from 200-2 Wood street to 439 Sixth avenue, Pittsburgh.

The Summit Rubber Co., of Barberton, Ohio, which is in the hands of receivers, states that it will not resume rubber manufacture.

A factory is being established in the outskirts of London by Johnson & Johnson, of New Brunswick, New Jersey, makers of surgical appliances, rubber bandages, plasters, etc. The factory at New Brunswick has been kept in continuous operation night and day for the past three months, filling orders for French and British hospitals, requisitions for five tons of bandage at one time being nothing unusual.

ADJUTANT TRUMBULL WARREN.

TRUMBULL WARREN, president of the Gutta Percha & Rubber, Limited, of Toronto, Canada, is one of the patriotic Canadians who are now at the front. As a youth he received considerable military training, and, as lieutenant in the Forty-eighth Highlanders, he was one of the first to respond to England's call for men. On his arrival in England he was at once appointed Assistant Adjutant on the Headquarters Staff and detailed for duty at Salisbury Plain. Mr. Warren, although in reality an enthusiastic Canadian, is very nearly a Yankee. His father, the late H. D. Warren, was a New Yorker who went to Toronto in 1887. There he at once took a prominent part in the business and social life of that busy city. He brought up his three sons, not as Canadians or Americans, but as sturdy, self-reliant citizens of the world. He also trained them in the important rubber business that he built, so that at the time of his passing the eldest son was able to take his place as president of the company. When the call to arms came he felt it "a duty" and at once responded. In the same spirit the two younger sons, H. D., Jr., and Frederic Alden, are working hard to fit themselves for service should the call come.

TRUMBULL WARREN.

A TREAD OF "VITALIZED" RUBBER.

The Vitalite Rubber Co., whose offices are in the Woolworth building, New York, is putting out a tire with a new "vitalized" rubber tread, regarding which it speaks as follows in a little booklet recently issued: "Our chemist has produced a tread stock of a new compound in which nearly all the sulphur has been eliminated. This compound will vulcanize before the duck and friction are burned by the high heat, as perhaps you know there is a limit to the time that duck can be left in the heat without its being ruined. We have produced a tread that is very much tougher than any other tire on the market."

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies on December 28, 1914, are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago.

	Bid.	Asked.
Ajax-Grieb Rubber Co., common	250	...
Ajax-Grieb Rubber Co., preferred	100	...
Firestone Tire & Rubber Co., common	348	352
Firestone Tire & Rubber Co., preferred	110	112
The B. F. Goodrich Company, common	23	25
The B. F. Goodrich Company, preferred	91	95
Goodyear Tire & Rubber Co., common	190	192
Goodyear Tire & Rubber Co., preferred	102	104
Kelly-Springfield Tire Co., common	65	68
Kelly-Springfield Tire Co., new 1st preferred	75	79
Kelly-Springfield Tire Co., new 2nd preferred	93	97
Miller Rubber Co.	160	...
Portage Rubber Co., common	25	30
Portage Rubber Co., preferred	80	85
Swinehart Tire & Rubber Co.	69	70
United States Rubber Co., common	51	53
United States Rubber Co., 1st preferred	100	102

PERSONAL MENTION.

Thomas O'Callaghan, Jr., has been appointed New York branch manager of the Empire Rubber & Tire Co., of Trenton, succeeding T. B. Todd, who recently resigned to become associated with Marshall, Wood & Co., automobile supply dealers at Plattsburgh, New York.

Richard F. Foote, factory manager and an officer of the Independent Rubber Co., of Merritton, Canada, was recently in New York and reported conditions as normal, with good prospects for increased business in army footwear.

C. D. Studebaker has been placed in charge of the New York office of the Firestone Tire & Rubber Co. Mr. Studebaker has been associated with the tire industry for a number of years, first with the Diamond Rubber Co. and later with the Walpole Tire & Rubber Co., joining the Firestone forces about a year ago.

J. J. Jordan, former manager of the Firestone company's New York branch, has gone to Europe with a view to increasing the foreign sale of Firestone tires.

R. W. White has been promoted from the management of the Columbus, Ohio, branch of the Goodyear Tire & Rubber Co. to a similar position with the Chicago branch. His successor at Columbus is W. W. Magil.

A. A. Templeton, vice-president of the Morgan & Wright Tire Co., of Detroit, Michigan, has been elected president of the Transportation Bureau of the Great Lakes Waterways Conference.

Charles Holden, of the Canadian Consolidated Rubber Co., Limited, Winnipeg, Manitoba, has been elected president of the Northwestern Commercial Travellers' Association of Canada, for the year 1915.

L. Greenwold, of Ashland, Ohio, has been appointed to the management of the Santiago, Porto Rico, branch of the Firestone Tire & Rubber Co.

At the annual meeting of the New England Shoe Wholesalers' Association, held December 9, at Young's Hotel, Boston, Mr. Fred C. Hood, general manager of the Hood Rubber Co., made an address on the contractual relations between shoe wholesalers and rubber companies, incidentally referring to the present condition of the crude rubber market and its principal tendencies.

Among those recently appointed by the Akron Chamber of Commerce to local committees are—F. A. Seiberling, head of the Goodyear Tire & Rubber Co., chairman of the street railway committee and also a member of the water committee; I. R. Bailey, department manager of the Goodyear company, municipal committee; Francis Seiberling, chairman of the entertainment committee.

C. D. Studebaker has been promoted from the sales force of the Firestone Tire & Rubber Co. to the management of the New York office.

Henry Plow, at one time treasurer of the Hartford Rubber Works Co., of Hartford, Connecticut, and later associated with the automobile industry, which he represented in London and Paris, has become sales manager and second vice-president of the Midgley Tire & Rubber Co., of Lancaster, Ohio.

COMPANY FORMED TO EXPORT RUBBER GOODS.

LATE in November the United States Rubber Export Co., Limited, was formed, for the purpose of concentrating and bringing under one control all the export business of the United States Rubber Co. On December 2 the incorporators of the new company met at the building of the United States Rubber Co. and completed the organization. The following board of directors was elected: Samuel P. Colt, president of the United States Rubber Co.; Lester Leland and James B. Ford, vice-presidents of that company; Elisha S. Williams, president of the Rubber Goods Manufacturing Co., and Homer E. Sawyer, general manager of the United States Rubber Co., also Raymond B. Brice, Charles C. Case, William E. Barker, Joseph C. Weston, Edward H. Huxley, H. Stuart Hotchkiss and William J. Maloney.

EDWARD H. HUXLEY.

The directors organized by electing the following officers: President, Edward H. Huxley; treasurer, W. G. Parson, who is also treasurer of the United States Rubber Co.; assistant treasurer, H. Stuart Hotchkiss, and secretary, John D. Carberry, who is also assistant secretary of the United States Rubber Co. and the Rubber Goods Manufacturing Co.

Edward Huxley, the president, has long been identified with the rubber business. At the time of the reorganization of the Boston Woven Hose & Rubber Co. he was one of A. M. Paul's right hand men. In 1911 he became assistant general manager and sales agent of the National India Rubber Co. Later he came to New York for the United States Rubber Co. and devoted himself to the export field. In this line he has proved himself an expert, becoming an encyclopedia of information on commercial geography, tariffs, trade routes, etc.

THE GREAT EASTERN RUBBER CO.

The Great Eastern Rubber Co., Inc., has been organized at Allentown, Pennsylvania, and incorporated under the laws of that state to manufacture, sell and distribute automobile tires and other rubber goods. The capitalization of this concern is $100,000—650 shares of 7 per cent. cumulative preferred and 350 shares of common stock—the organizers having purchased the common and turned over to the company $13,500 in cash, with equipment and stock valued at $24,000, as well as a patent covering the "Crown" tire which it is their purpose to manufacture, operating a factory at Allentown. The special claims for this tire are that it has two more layers of fabric than any other tire, that its resiliency point is at the side instead of at the bead, and that it has an extra heavy tread. The officers are: V. A. Nagle, president; D. M. Knabb, vice-president; Charles R. Fluck, treasurer; A. E. Dodge, secretary. Messrs. Nagle and Dodge are experienced tire men, and Charles Sullivan, the factory manager, has long been associated with tire manufacture.

BOSTON BELTING CO.

The following is a condensed summary of the September 30 balance sheet of the Boston Belting Co.:

LIABILITIES.		
Capital stock		$1,000,000.00
Reserve fund		800,000.00
Profit and loss		46,918.69
Notes payable		200,000.00
Unsettled bills		31,401.50
ASSETS.		
Real estate, land and buildings	$351,256.01	
Water privilege	150,000.00	
Machinery	269,763.28	
Tools, furniture and fixtures	107,876.76	
Cash	53,693.94	
Bonds receivable; notes receivable; Investment Acct.; accts. receivable	650,544.83	
Merchandise	495,035.37	
Trade marks, etc.	150.00	
	$2,078,320.19	$2,078,320.19

ALEMBIC GUM.

In spite of the explosions and their fatal results, noted in recent numbers of THE INDIA RUBBER WORLD, the Alembic Process Co., Perth Amboy, New Jersey, is still at work on its synthetic rubber. Rumor has it that it is made from turpentine and costs but 12 cents per pound. A professor of chemistry at Wesleyan University is said to have examined the process and reported favorably upon it.

A RUBBER RETAILER CELEBRATES HIS 25th ANNIVERSARY.

THE INDIA RUBBER WORLD is not the only institution connected with the American rubber trade that has recently celebrated its 25th anniversary. Howe's Rubber Store, situated in Central Square, Lynn, Massachusetts, started in business in December, 1889, and has just celebrated the completion of its 25th year. As a souvenir of this event it has distributed a little pocket memorandum book in which the reason of its success is described as follows: "This is largely due to our invariable policy of seeking quality and worth, rather than the prevalent disposition of our present day retailers—low prices."

PINES RUBBER CO. TO DO RUBBERIZING FOR THE TRADE.

The Pines Rubber Co., Inc., has purchased the business of the Anglo-American Rubber Corporation, situated at Bush Terminal building No. 19, Brooklyn. The incorporators are Joseph, David and Morris Pines, who are also proprietors of the Pines Manufacturing Co., of 55 West Twenty-sixth street, New York, which manufactures raincoats. The Brooklyn plant is being utilized for the rubberizing of fabrics for the Pines manufacturing concern, and will soon be in a position to also do rubberizing for the trade.

CLEVELAND FACTORY TO BE USED AS RUBBER WORKS.

The Standard Tire & Rubber Co. has purchased land and buildings at Cleveland, Ohio, formerly occupied by the American Fork & Hoe Co., and are making the necessary alterations to convert the plant into a rubber factory. This purchase includes two 2-story buildings respectively 360 x 120 and 300 x 60 feet and a 2-story wing 90 x 35 feet, with separate buildings for engines, boilers, etc. The capitalization of the company, at present $100,000, is soon to be increased. The product will consist of solid tires, pneumatic tires and tubes and mechanical rubber goods, and the factory, which will probably not be ready for operation before July next, will be equipped to turn out about 500 tires per day. Its specialty will be the "Flex Steel" inner tire, a device composed of steel and rubber (both made from secret formulas in the possession of the company) and of fabric. The company's officers are: M. J. Gillen, president; George G. Russell, vice-president; C. F. Groth, treasurer; Charles B. Shaw, secretary. These officers, with E. L. Thompson, J. F. Schulte, E. W. Silver, L. R. Adams and Dr. J. V. Gallagher, compose the board of directors.

PURCHASING AGENT ROSWELL C. COLT.

THE day of infallible prophecy being past, it is quite hazardous to predict now what will take place some years from now. It would be venturesome, for instance, to predict that Mr. Roswell C. Colt, recently made purchasing agent of the Canadian Consolidated Rubber Co., Limited, would some day occupy the position now graced by his distinguished father, who is president of the largest rubber manufacturing company in the world.

ROSWELL C. COLT.

But it would not be venturesome to predict that young Mr. Colt will arrive at some highly desirable goal in the rubber manufacturing industry — and for three good reasons: He has a fine start; he is headed the right way, and he is going strong.

He graduated from Harvard in 1910. It is safe to say that he might have stepped into something quite comfortable, with a mahogany desk and office boy with buttons, if he had applied for it, but he didn't. He went to Canada, bought a pair of overalls and got a job with the Canadian Consolidated Rubber Co., Limited. He started for Winnipeg and began to hustle cases in the company's big warehouses at that place. This kept his muscles hard and incidentally gave him a chance to get acquainted with the system of distribution employed by a large manufacturing concern.

Four months later, after having mastered the distribution problem, he returned to the factory to learn how goods were made. The most important and one of the most difficult articles to make in a rubber factory is the automobile tire, so he got another pair of overalls and began tire making, working from 7 a. m. to 6 p. m. When he had reached the point where he could make as good a tire as anyone he began to look around to see what material was used in the factory, and why, and how much, and what it cost and where it came from; and in due time he was equipped to drop tire making and take up the buying of supplies, so they have made him purchasing agent.

All this in less than four years' time. Not a bad start!

S. A. E. MEETING JANUARY 5-7.

The annual meeting of the Society of Automobile Engineers will be held in the auditorium of the Engineering Societies' building, at 29 West Thirty-ninth street, January 5-7. The program includes papers on a number of interesting subjects, among which is one, scheduled for Wednesday evening, January 6, by C. B. Whittelsey, secretary and factory manager of the Hartford Rubber Works Co., of Hartford, Connecticut, on "Pros and Cons of Correct Tire Inflation." This paper and the discussions it leads to are expected to assist in the solution of the problem of proper tire inflation as associated with tire loads and sizes, which has been engrossing the attention of the standards committee of the association for some time.

TRADE NEWS NOTES.

The new offices of the Rubber Trading Co. in the Postal Telegraph building, corner of Broadway and Murray street, are a move in the right direction; that is, they are more easily found by the trade. The building is modern and the customers' room is a very large apartment adjoining a large sample room. Not only that, but in the top of the building is the famous Hardware Club, where so many of the downtown rubber men are wont to lunch.

The S. A. P. Co., 327 Produce Exchange, New York, informs THE INDIA RUBBER WORLD that in its investigation of vegetable oils used in rubber manufacture great differences in purity are found. For this reason the company has established a department of examination, which is in charge of an expert chemist, so that absolutely pure oils of any sort can be assured.

The New York agency of the Russian French India Rubber, Guttapercha & Telegraph Works, Riga, Russia, advises THE INDIA RUBBER WORLD that it has been completely cut off from its source of supplies for the present. This agency informs us that the factory is running fully, the output being required for government use. It is hoped soon, however, to have government permission for the continuation of export of rubber goods from Russia.

On December 1 there was in bonded warehouses in New York 348,974 pounds of chicle, valued at $117,903; manufactures of gutta percha to the value of $91,419; india rubber manufactures worth $70,878, and of elasticon $606. The records for December 1, 1913, give the value of chicle in bond on that date $63,976; manufactures of gutta percha, $86,750; manufactures of india rubber, $45,440.

The Vulcanized Rubber Co., of Morrisville, Pennsylvania, which manufactures hard rubber goods, is increasing its plant by the addition of a building for the storing of scrap rubber.

The Canadian government has forbidden the export of rubber from Canada to any country other than part of the British empire. The commerce of Canada in rubber goods has in the past amounted to about $4,500,000 annually, of which amount exports have represented approximately $500,000.

On December 1 the Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin, announced a reduction in price on its rugged tread tire casings, in sizes from 30x3 inches to 36x5 inches, amounting to from $4.40 to $7.95 per tire.

Fire recently damaged the storehouse of the Converse Rubber Shoe Co., of Malden, Massachusetts, to the extent of about $10,000, a loss fully covered by insurance.

The Gibney Tire & Rubber Co., of 250 West Fifty-fourth street, New York, has reduced its capital stock from $100,000 to $50,000.

The offices of the New York Shield Co., which manufactures the "Amolin" shield, were removed on December 1 to 19-25 East Twenty-fourth street, New York.

Some good-sized contracts for fire hose have recently been awarded in western cities, The B. F. Goodrich Co., of Akron, Ohio, having secured an order for 9,000 feet from the fire department of Minneapolis, Minnesota; the Manhattan Rubber Manufacturing Co., of Passaic, New Jersey, a contract for 5,000 feet from the city of St. Paul, Minnesota, and the C. C. C. Fire Hose & Rubber Co., of Canton Junction, Massachusetts, an order for 1,000 feet to equip the department at Eau Claire, Wisconsin.

The Habirshaw Wire Co. has removed its sales office to its general headquarters at Yonkers, New York.

The Franco-American Rubber Cloth Co. has opened a factory at Como, New Jersey.

On and after January 4, 1915, The Charles T. Wilson Co., Inc., of New York City, will maintain an office at Room 507, Second National Building, Akron, Ohio, in charge of Henry Perlish, vice-president of the company.

NEW INCORPORATIONS.

Anderson Pneumatic Spring & Tire Co., November 27, 1914; under the laws of Delaware; authorized capital, $1,000,000. Incorporators: William W. Anderson, George A. Rock and Samuel T. Dorsett—all of Washington, D. C. The company is to acquire and take over from James C. Anderson, of Washington, D. C., an exclusive license granted by the United States, so far as it relates to pneumatic springs, starters, brakes and tires for automobiles and other vehicles.

Anti-Puncture Corporation, December 9, 1914; under the laws of New York; authorized capital, $20,000. Incorporators: Chas. H. Stanton, 105 Beverly Place, Brooklyn, New York; Myra Emmons, 804 West One Hundred and Eightieth street, and Sidney V. Morris, 302 West Twenty-second street—both in New York City. To manufacture compositions for preventing punctures in tires, etc.

Bucyrus Rubber Co., The, December 2, 1914; under the laws of Ohio; authorized capital, $150,000. Incorporators: G. B. Smith, Jay Taylor, H. B. Stewart, Ed. L. Smith, and Isaac H. Taylor. To manufacture and deal in rubber goods.

Community Rubber Co., November 20, 1914; under the laws of New Jersey; authorized capital, $25,000. Incorporators: P. S. Martinett, J. R. D. Bower and H. S. Allen—all of Trenton, New Jersey. To manufacture, purchase, sell and deal in all kinds of rubber goods and articles in which rubber is a part.

Dixie Tire & Rubber Co., October 3, 1914; under the laws of New Jersey; authorized capital, $10,000. Incorporators: Carrie M. Downing, Charles J. Downing—both of Vaux Hall—and Frederick B. Taylor, South Orange—all in New Jersey. To deal in and sell automobiles, vehicles and accessories of every kind.

Dujardin Rubber Co., Inc., December 7, 1914; under the laws of New York; authorized capital, $100,000. Incorporators: Henry Dujardin, 3303 Glenwood Road, Brooklyn, New York; Frank B. Hutcheon and Frank E. Hutcheon—both of 205 Avenue A, Bayonne, New Jersey. To manufacture tires, tubes, rubber goods, etc.

Eastern Tire & Supply Co., of Rochester, N. Y., Inc. December 8, 1914; under the laws of New York; authorized capital, $5,000. Incorporators: James G. Barclay, Buffalo; Wm. T. Kineaig and Arthur Smith—both of Rochester, New York. To manufacture tires and auto accessories.

Empire Wheel & Tire Co., November 9, 1914; under the laws of Alabama; authorized capital, $2,000. Incorporators: J. W. Gannon, W. S. Webber, F. H. Elmore, Jr. Principal place of business, Montgomery, Alabama. To deal in auto tires, etc.

Ford Tire & Tube Co., The, November 14, 1914; under the laws of Ohio; authorized capital, $10,000, divided into one hundred shares of $100 each. Incorporators: E. E. Rodd, C. V. Liggett, U. L. Henzy, C. A. Levy and Lee Ulmer. To manufacture and sell rubber tires and tubes for automobiles.

Germantown Almegum Manufacturing Co., July 15, 1914; under the laws of Pennsylvania; authorized capital, $10,000. Incorporators: John Axford, 343 E. Chelten avenue; William B. Keefer, Newport Apartments; Frank M. Camp, 321 Lincoln avenue, and J. L. McGiehan, 405 Lexington avenue—all in Philadelphia, Pennsylvania. To manufacture and sell mechanical rubber goods.

Gibraltar Tire & Tube Co., December 16, 1914; under the laws of New Jersey; authorized capital, $100,000. Incorporators: Harry L. Brown, William Seale, Randolph Bradshaw and Raymond Brown—all of Newark, New Jersey. To manufacture and sell automobile tires, tubes and rubber of every character and description.

Gillette Safety Tire Co., The, November 21, 1914; under the laws of Maine; authorized capital, $1,000,000. Incorporators: Albert F. Jones, T. L. Groteau, A. B. Farnham, Clarence G. Trott—all of Portland, Maine. To sell and deal in rubber or similar substances.

Great Eastern Rubber Co., November 19, 1914; under the laws of Pennsylvania; authorized capital, $100,000. Incorporators: Charles R. Fluck, Daniel M. Knabb—both of Allentown—and Van A. Nagle, Easton—all in Pennsylvania. To manufacture and sell rubber tires and other articles of commerce of which rubber is an ingredient.

Johnson Pneu-Metal Tire Co., October 2, 1914; under the laws of Massachusetts; authorized capital, $1,000,000. Incorporators: Fred I. Johnson, Prospect street, Fitchburg; James H. Duffy, 18 Tremont street, and William P. Meehan, Boston—all in Massachusetts. To manufacture and deal in tires, etc.

McClurg Rubber Co., The, November 23, 1914; under the laws of Ohio; authorized capital, $250,000. Incorporators: John S. McClurg, James L. McClurg, Wm. Z. Davis, W. A. Hinebaugh and O. D. Tucker. To manufacture, sell and buy at wholesale and retail rubber tires for automobiles.

Mircho Specialty Co., Inc., December 16, 1914; under the laws of New York; authorized capital, $3,000. Incorporators: Arthur C. Squires, Keyport, New Jersey; Jacob A. Lewis, 4633 Park avenue, New York, and Paul H. Allen, 45 West Thirty-fourth street, New York City. To manufacture rubber goods.

Motor & Tire Sales Co., December 14, 1914; under the laws of Delaware; authorized capital, $100,000. Incorporators: Herbert E. Latter, William J. Maloney, Oscar J. Reichard—all of Wilmington, Delaware. To manufacture and deal in automobiles, motor cars, etc., as well as to repair tubes and automobiles.

Overman Cushion Tire Co., Inc., December 2, 1914; under the laws of New York; authorized capital, $150,000. Incorporators: Mac C. Overman, 250 West Fifty-fourth street; Charles A. Taussig, 220 Broadway, and Wm. R. Lowther, 43 Cedar street—all of New York City. To manufacture tires, rims and other auto accessories.

Para Products Co., Inc., The, September 10, 1914; under the laws of New Jersey; authorized capital, $5,000. Incorporators: Jacob Schreiber, 149 Broadway; Alfred Epstein, 1777 Broadway, and Frank Brown—all of New York City. To manufacture, purchase and sell rubber goods and all goods of which rubber is a component part.

Pines Rubber Co., Inc., December 16, 1914; under the laws of New York; authorized capital, $1,000. Incorporators: Jos. Pines, 1221 Forty-second street; David Pines, 364 Hopkinson avenue, and Morris Pines, 1254 St. Marks avenue—all of Brooklyn, New York. To manufacture raincoats, rubberized materials, etc.

Searle Unburstable Inner Tube Co., Inc., The, December 9, 1914; under the laws of New York; authorized capital, $400,000. Frederick H. Hall, Hotel Astor; Orson Kilborn, 316 West Seventy-eighth street, and J. Campbell Thompson, 63 Wall street—all of New York City. To manufacture inner tubes and tires, etc.

Service Tire & Rubber Co., October 14, 1914; under the laws of Maryland; authorized capital, $10,000. Incorporators: James L. Clifford, Joseph W. Clifford, James J. Filon, J. W. Evans and Catherine Clifford—all of Baltimore City, Maryland. To manufacture, purchase, sell, repair and otherwise deal in rubber and rubber goods of all kinds, and especially tires of every character and description.

Three Star Tire Co., December 10, 1914; under the laws of New Jersey; authorized capital, $50,000. Incorporators: Edward H. Steel, 1102 West State street; Archibald F. Updike, 240 East Front street, and Richard G. Whitehead, 921 Berkley avenue—all in Trenton, New Jersey. To buy, sell and deal in rubber tires and tubes, etc.

Stern Co., David F., November 5, 1914; under the laws of New York; authorized capital, $5,000. Incorporators: David F. Stern,

210 West Forty-fourth street; J. H. Halfbey and Isidor Lobatto —both of 1053 Southern Boulevard—all in New York City. To deal in boots, rubber shoes, etc.

Wire Tire Co., November 28, 1914; under the laws of Delaware; authorized capital, $1,000,000. Incorporators: John S. Lyons, 412 North Main street; George T. Brown, 40 North Main street—both of Wilkes-Barre—and Thomas A. Zukoski, Plymouth—all in Pennsylvania. To manufacture and sell automobiles, automobile tires, rims or accessories.

X Protectyre Co., Inc., The, November 21, 1914; under the laws of New York; authorized capital, $20,000. Incorporators: Isidore Neustaedter and Hyman J. Rosenbloom—both of 63 Park Row, and Alfred Alexander, 50 West One Hundred and Eleventh street—all of New York City. To manufacture tire protecting devices and other auto accessories.

BUSINESS ACTIVE WITH CONVERSE CO.

According to its monthly statement for November, the Converse Rubber Shoe Co., of Malden, Massachusetts, is making 9,000 pairs a day against 6,000 pairs in November, 1913. The company having refused to bid on foreign orders for this season, the increase is solely attributable to home demands. It has been found necessary to operate many departments night and day.

TRADE NEWS NOTES.

Rubber footwear prices, which for the past two years have been announced in January, and prior to that time were published in April, are not yet ready. The "Boot & Shoe Recorder," in its issue of December 12, states that new price lists will be issued March 1.

At the meeting of the Retail Shoe Association of Louisville, Kentucky, the subject of profits to be obtained on rubbers was discussed, some dealers maintaining that rubbers selling at wholesale for 65 cents per pair should be retailed at $1.25, while others claimed that a price of $1 per pair—which would give the dealer a profit of 31 per cent. on the selling price and of 44 per cent. on the cost price—would encourage the public to buy more freely.

Large orders are being received by Canadian manufacturers for rubber shoes for the Allied armies. The Canadian Consolidated Rubber Co., Limited, of Montreal, has received an order for over 60,000 pairs of two-buckle arctics, through representatives of the British government, and practically all the rubber shoes in stock at the warehouse of this company and the branch in that city of the Gutta Percha & Rubber, Limited, have been bought for immediate shipment.

The Loewenthal Co. has removed its New England office from Chelsea, Massachusetts, to 161 Summer street, Boston.

The plant of the Leicester Rubber Co., at Catasauqua, Pennsylvania, damaged by fire last summer, was sold by the receivers on November 24 at $5,900, the machinery bringing $4,800 and the site and what remains of the building $1,100.

Fire recently damaged the plant of the United States Rubber Reclaiming Co., at Buffalo, to the extent of about $75,000. This plant was valued at $1,000,000, and the fire is supposed to have been caused by spontaneous combustion.

The United States Rubber Co. has opened a new branch store at Indianapolis, Indiana, in charge of J. H. Hassett, formerly of the Banigan Rubber Co.'s Chicago force and also at one time connected with the New England Rubber Shoe Co., at Boston.

Fred Becht, who for a number of years was connected with the Goodyear's India Rubber Selling Co., has been appointed manager of the Maumee Rubber Co., at Toledo, Ohio.

An organization known as the Federal Goodfellowship Club, composed of employes of the Federal Rubber Manufacturing Co., of Milwaukee, was instrumental in bringing Christmas cheer to a number of the less fortunate of that city during the holidays. This club had envelopes distributed among the employes on pay days for some time prior to Christmas, and each contributed what he could conveniently spare toward the cause.

The regulations under schedule B of the Emergency Revenue law, operative on and after December 1, 1914, provide that on chewing gum or substitutes therefor stamps must be affixed by the manufacturer before packages leave the factory, at the rate of 4 cents for every dollar's worth of gum at retail price; and that a label showing the number of tablets in the package, with the retail price of each tablet, must also be affixed.

The Plymouth Rubber Co., of Canton, Massachusetts, has recently contracted with the Edison Electric Illuminating Co., of Boston, for a supply of energy equal to about 1,600 horse power for 24 hours per day, and amounting to about $40,000 a year.

An announcement has been received to the effect that Messrs. Harold van der Linde and Victor van der Linde have severed their connection with the Century Rubber Co., of Plainfield, New Jersey.

Some interesting figures have been compiled by the Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin, in regard to its output of tires for baby carriages. The quantity of this material sent out from the factory in October was sufficient to equip 88,000 baby carriages, which, at 12 feet of tire per carriage, would require 1,056,000 feet, or 200 miles.

A ruling of the Circuit Court of Appeals in the case of the L. E. Waterman Co., of New York, against the Modern Pen Co.—both manufacturers of fountain pens—has been affirmed by the Supreme Court, which holds that there is no proprietary interest in the name Waterman, and that the Modern Pen Co., with which Arthur A. Waterman is associated, may mark its wares "Arthur A. Waterman & Co.—Not connected with the L. E. Waterman Co."

The rubber stamp making establishment of R. A. Stewart & Co., Inc., at 203 Broadway, New York, was severely damaged by the fire which recently destroyed the three upper floors of the five-story building at that address.

The B. F. Goodrich Co., of Akron, is one of the rubber concerns that has profited from the season's big grain crops, having filled a great many orders for their "Longlife" and "Maxecon" conveyor belts for use in western elevators. Some of these belts are 715 feet long and 40 inches wide.

A meeting of stockholders of the Northland Rubber Co., Inc., which manufactures pneumatic tires and tubes, was held at the company's office at 703 Northland avenue, Buffalo, on November 17, when the following directors were elected: B. L. Jones [president]; G. C. Riley [secretary], and C. O. Henderson, for three years each; W. F. Kasting [vice-president], H. D. Miles and C. L. Ingham, for two years each; J. E. Ferguson, C. B. Hill and J. Jolly [assistant treasurer] for one year each.

The El Paso Rubber Vulcanizing and Auto. Supply Co., of El Paso, Texas, has filed certificates of dissolution.

A convention of the National Foreign Trade Council, of which James A. Farrell is chairman, will be held at the Planters' Hotel, St. Louis, Missouri, January 21 and 22.

The Motor Truck Club of America held its annual meeting and banquet on Wednesday evening, December 16, at the Automobile Club of America, New York. The club now has 344 members, representing all the various industries associated with truck manufacture and operation, its membership including 15 tire manufacturers and 9 tire salesmen. At this meeting George H. Duck, of the Sewell Cushion Wheel Co., was elected a director for a three-year term.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

THAT the 5 per cent. increase in freight rates granted Eastern railways December 18 by the Interstate Commerce Commission will result in stimulating the local rubber trade, was the statement made, when interviewed, by F. A. Seiberling, president of the Goodyear Tire & Rubber Co.; H. S. Firestone, president of the Firestone Tire & Rubber Co.; W. A. Means, treasurer of the B. F. Goodrich Co., and other officials of Akron rubber companies. When conditions are normal the railroad companies place big orders for rubber hose, belting and other supplies, but during the past year they have ordered only rubber supplies to meet emergency requirements, according to leading officials of the local companies. That the new year will usher in another era of prosperity is the general impression in local rubber circles. All the manufacturers are preparing to meet the demand for Akron products that they feel confident is sure to come.

But Akron rubber men view with some alarm the continued deadlock between England and the United States Department of State over the embargo placed on all crude rubber from the East. While practically all of the Akron companies have a fairly large supply of crude rubber in stock, they are forced to depend almost entirely upon the Brazilian product and this source of supply, it is feared, may prove inadequate if the embargo on the Eastern product continues for an indefinite length of time. In the face of the large volume of business which Akron companies are preparing to handle during the early months of 1915, a short supply would prove a serious handicap.

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On the strength of rumors that the annual reports of The B. F. Goodrich Co. will show earnings of more than $6,000,000 on common stock, an unusually heavy demand has been created during the past month for shares. Holders of the stock at the present time are at least $5,000,000 richer than they were a month ago, and indications are that it will go even higher before the next annual meeting. Much attention has been attracted to the increased demand, created originally by Eastern investors, for Goodrich shares, and local brokers predict that they may reach $30 before the first of February.

Goodyear and Firestone stocks have also been actively traded in during the month by local investors.

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Perhaps the most interesting news of the month in local rubber circles was the report at the annual meeting of stockholders of the Goodyear Tire & Rubber Co. that the common stock had earned 36 per cent. during the year ending October 31, 1914. Despite the war in Europe and the general business depression, the company reported the most prosperous year in its history and the figures in the company's books presented at the meeting bore out this statement. The net earnings for the year were $3,391,000; the cash on hand $2,862,000; the unappropriated surplus $4,052,000, which equals 40 per cent. of the common stock of the company. The stockholders re-elected the directors—F. A. Seiberling, C. W. Seiberling, G. M. Stadelman, F. H. Adams, P. W. Litchfield, H. H. Manton and J. P. Loomis.

* * *

Of interest to the rubber trades was the Akron Automobile & Electrical Show, the first of its kind in this city, held from December 12 to 19. Practically all of the local rubber companies exhibited, in addition to a showing of the products of the leading automobile and accessories manufacturers of the United States. The exhibits represented a value of more than $300,000. Nearly 50,000 people visited the exposition. A permanent organization to promote a similar show each year has been effected and the substantial support given the promoters this year will enable them to begin 1915 with a surplus. A modest dividend was declared on the first show. The members of the organiaztion are E. T. Jones, Andy Auble, Jr., C. C. Welker, G. W. Funk and W. L. Stouffer.

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F. A. Seiberling, president of the Goodyear Tire & Rubber Co., visited Washington late in December and called on President Wilson. He went to the British Embassy, armed with a letter of introduction from the White House, and had a talk with Sir Cecil Spring-Rice, the British Ambassador. Later, he said that he was going to London to lay his protest before the British government.

* * *

Additions under course of construction to the Firestone plant, which will be ready for occupany early in 1915, will give this company more than 100,000 feet of additional floor space. At least 10 per cent. more men are being employed than in the closing months of 1913, according to President H. S. Firestone. Reports made at the annual meeting a few weeks ago showed sales for the fiscal year in excess of $20,000,000.

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The Rubbertown Tire Co., of Akron, has been incorporated, with a capitalization of $10,000. The incorporators include O. J. Schwab, local crude rubber man; J. F. Darcy, a New Yorker, and N. M. Greenberger. It was stated today that those interested are not connected with other rubber interests, and that the company will be an independent concern.

* * *

The "Made in Akron" show, which was to have been staged in this city early in January, has been postponed until later in the year. Many of the largest concerns intending to exhibit were Akron rubber companies, and their officials believed that a better showing could be made if more time was given to preparation.

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An order of the Ohio State Board of Public Works increases the rates to local rubber companies using water from state lakes from 3 to 5 times the rate paid in past years. This increase will cost the companies more than $25,000 per year.

* * *

The purchase of a site in the business section of the city last month paves the way for the erection of a community garage in which Akron rubber men are interested financially.

Owing to the increase in the number of automobile tire users in Akron many of the big tire concerns, including the Goodrich, Goodyear, Firestone and Miller companies, have established service stations for the convenience and benefit of their patrons.

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Photographs of the interior of the new mansion erected by H. S. Firestone, president of the Firestone Tire & Rubber Co., have been taken for the Tiffany Studio—which directed the work of interior decorating—and will be reproduced in several of the leading magazines of the country.

Mrs. B. G. Work, wife of the president of The B. F. Goodrich Co., has ordered 50 dozen pairs of socks from a Detroit knitting company, to be delivered to the Vacation War Relief Society, which is collecting supplies for the Allied soldiers at the front.

Mr. C. B. Raymond, secretary of the Goodrich company, is in California on a tour of inspection of the company's branches through the West.

Mr. Frank Sell, of the Goodrich office, has been transferred to the company's branch at Omaha. Mr. Sell and his family left last week for the Nebraskan city, where he will begin his work January 1.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

SPEAKING broadly, at present writing, four days before Christmas, there is no rubber trade in Boston. Rubber men in all lines except those influenced by the weather are far from enthusiastic regarding business conditions. Business is generally dull in these lines the latter part of December, and this year shows no exception but rather an emphasized condition of inactivity. Automobile tire makers are running their works to reduced output. Mechanicals are in retail rather than wholesale demand. There was a good call for druggists' rubber goods up to last month, since which time trade has fallen off. The manufacture of rubber soles and heels is active, for shoe manufacturers are using many of these in place of high-priced leather. The greater part of the month of December, like the previous one, has been too mild and too dry to give any impetus to the clothing and footwear trade, but the long-looked-for snow started the Monday before Christmas, with the effect of immediately stimulating these lines of the rubber trade.

There is considerable talk, hereabouts, of the possibility of capturing orders for several hundred thousand pairs of rubber boots for the armies of the Allies in the field. Just now there are hints that a certain firm of exporters is "nearly ready" to place orders for these boots, and its agents have secured samples and prices from several of the rubber manufacturers. All the manufacturers seem to know about it but under pledge of secrecy refuse to give out any information. That large shipments have already been sent to Great Britain from this port and New York is a well-authenticated fact. That such large orders as mentioned above may be placed is not so assured a fact. But there is no doubt that the soldiers now in the trenches need waterproof and cold-proof footwear, and while there are large manufacturers of rubber boots in England and Russia, there may be a good opportunity for American rubber shoe manufacturers to supply a portion of the demand.

Apropos of this, some of the rubber footwear manufacturers received inquiries whether they can furnish 100,000 pairs of short boots, and on what terms. This has led to the discovery that no company is "long" on short boots, and it is rather doubtful if that number of such boots could be found in the factories or jobbing houses of the entire country. In spite of the comparative mildness of the season, and the fact that the factories made nearly or quite their full quota of advance supplies, the shipments out of the country, and the demands of the regular trade, have reduced the stocks of floor goods to comparatively small proportions.

It is reported that some agents of foreign governments are now in this country trying to buy heavy shoes of leather for army wear; that some of them have been unable to make satisfactory arrangements for such supply, and that they are now investigating rubber-sole leather-upper footwear, similar to hunting boots, as a substitute for the leather shoes.

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The B. F. Goodrich Co., of Akron, has for a long period had a branch selling agency on Boylston street in this city, where its tires were sold. Last month the company established an agency at this location for the sale of its "Hipress" footwear. Mr. F. T. Moore, the regular branch manager, will have general supervision over the agency.

* * *

We had a dog show in Boston the first week in December, and as this was somewhat of a "society" affair, it was attended by "many of the best families." Although the principal exhibits were dogs of many varieties, perhaps the greatest attention was attracted to six pairs of rubber boots. These boots were not of the standard variety, however, but were made to order for "Babykins," "Tiny Tim" and "Toy," three dogs of aristocratic pedigree, and were worn by the canine pets so they wouldn't get cold feet. This may start a fashion which will help out the rubber footwear industry in dull seasons.

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Mr. Thomas A. Forsyth, of the Boston Belting Co., has been appointed a trustee of the Boston City Hospital, to take the place made vacant by the resignation of Dr. Dowling, who had become superintendent.

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The Hubmark Rubber Co., which succeeded to the rubber shoe business of Lamkin & Foster, in this city, and took the store on Congress street which that firm had occupied for many years, has removed to one of the upper floors at 297 Congress street, where it will be located until next spring. At that time it will probably occupy a building on Summer street extension, near the present stores of W. F. Mayo & Co., The Congress Shoe & Rubber Co. and the Regal Shoe Co. This business is under the management of Chester J. Pike, Jr., son of C. J. Pike, for many years prominently connected with the United States Rubber Co.

THE RUBBER TRADE IN CHICAGO.

By Our Regular Correspondent.

GENERAL conditions in the local rubber trade show a great improvement over those of a month ago. Trade holds about the same. The volume of business in tires and all the articles which compose the mechanical rubber line has been satisfactory. The season has been open until the last two weeks, and automobiles remained out much longer than usual. During the past two weeks there has been a great demand for rubber clothing, with dealers anxious for the goods they would hardly look at a few weeks ago.

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Proprietors of rubber clothing stores robbed one after another in rapid succession about a year ago, last week received some light on the operations of the gang that did the looting. Several of the band, who were found guilty and sentenced to prison terms, were brought back to the city to testify in a sensational police graft scandal. One of them states that the gang worked under police protection, and that the officers even assisted them in some of the robberies. They would drive a wagon up to the rear door of the store and make away with all the contents, in many instances leaving nothing but the fixtures. The property would then be sold from wagons in the slums of the city, valuable raincoats, boots and overshoes being passed out at sacrifice figures. When an honest officer interfered the crooks would submit to arrest, to be later set free by higher officials who were getting a part of the profits. The Goodyear Raincoat Co., which has stores at several locations in the loop district, was a frequent victim.

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J. E. Duffield, district manager of the Thermoid Rubber Co., of Trenton, New Jersey, states that the company is closing one of the most successful seasons in its history. Business on all lines has been rushing. On the first of the new year J. H. Liston becomes manager of the Detroit branch which this company has established. Mr. Liston is well known in the local rubber trade, and while his work in the northern city will be of a pioneer nature great things are expected of him. O. C. Hendry, who was formerly of the Texas branch of the Fisk Rubber Co., of Chicopee Falls, Massachusetts, on the same date became northwestern representative of the Thermoid company.

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Henry Spadone, president of the Gutta Percha & Rubber Co., New York, was a prominent visitor to the city during the month. F. McCullough, of the local branch, states that the business of the company for the year just closing has been entirely satisfactory, and has shown a marked expansion in many lines, particularly belting and packing.

The Goodyear Tire & Rubber Co., which moved some time ago to a new location at 1601 South Michigan avenue, has been doing a rushing business for the past month. An advertising feature which deserves mention is a large tire, said to be the largest ever made, which is being displayed in the window. The tire measures 48x8 inches, and is of the pneumatic type.

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There is to be a meeting of the organizations interested in promoting good roads throughout the state some time during the next few weeks, to be held at the Hotel La Salle, in which many prominent State officials are expected to take part. Tire and automobile concerns are much interested in the movement.

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The retail trade during the holiday season has been very satisfactory, expecially on all rubber novelties. "Kewpie" dolls of red rubber are very popular, and one firm reports a fine business on this item alone.

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Trade paper advertising was given a direct boost in a recent address by John Allen Underwood, the well known advertising expert, at a luncheon of the Executives' Club held at the Hotel Sherman. Mr. Underwood declared that the secret of success in advertising lay in concentration, especially where the appropriation of the advertiser was limited. The retailer, he said, should be the center of advertising, as he is the center of distribution.

THE RUBBER TRADE ON THE PACIFIC COAST

By Our Regular Correspondent.

CONDITIONS in the rubber trade on this coast are satisfactory to the trade, the business for the fall season showing an increase and excellent prospects. The demand for tires is constant and develops with the increase in the number of motor vehicles in use. The extent to which automobiles are used in this section is shown by the fact that in a statement of expenses incurred by a candidate in the recent elections the item for tires alone amounted to $213. In addition there are many motorcycles, the number of these registered on December 1 being 24,379.

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The Universal Tire Co. expects to have its factory at Anaheim, California, ready for operation early in January, employing about 200 men at the start and equipped to turn out about 100 tires a day. This factory is three stories high, 80x200 feet in area.

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The tire and accessory dealers of Fresno, California, have formed an organization known as the Fresno Automobile Tire & Accessory Dealers' Association. This association was started with 30 members, and will hold monthly meetings.

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H. A. Thompson, who has been succeeded in the management of the Spokane branch of the United States Rubber Co. by E. A. Griffith, has assumed similar duties in connection with the Seattle and Tacoma branches of the same company.

* * *

Ed. S. Campion, for the past six years manager of the factory branch of the Firestone Tire & Rubber Co. at Seattle, and for seven years previous a member of the Firestone sales force, has severed his connection with that company to become sales manager of the Marathon Tire & Rubber Co. of Akron. He has been succeeded by C. W. Brown, former manager of the Firestone San Francisco branch.

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W. H. Bell, for the past three years manager of the Firestone Tire & Rubber Co.'s branch at San Francisco, has gone over to the Kelly Springfield Tire Co. as general Pacific coast sales manager, with F. H. Hearsch as assistant and general representative. C. A. Jessup has been appointed manager of the Los Angeles branch of the company.

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C. H. and T. C. Jones, the former of whom has been for the past two years connected with the Seattle branch of the Republic Rubber Co., of Youngstown, Ohio, have established a Republic agency at Tacoma, Washington.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

BUSINESS in Trenton, in the rubber and associated industries, shows no decrease in activity; and that general prosperity exists is evidenced by the generous response to the numerous appeals that have lately been made for contributions for the relief of war sufferers and for the various local philanthropies. About $9,000 has so far been sent from this city for war relief, in addition to supplies of considerable value. More than $5,000 of this amount was collected for the Belgian Relief Fund, and about $3,000 for the British Isles Relief Association. The Poor Children's Christmas Fund has had particular interest for the rubber trade, and has been contributed to generously. The workmen of the Thermoid Rubber Co. have given quite freely to this fund, as they have done in previous years, and donations were also made by the Katzenbach & Bullock Co., Inc., dealers in chemicals for the rubber trade. The United & Globe Rubber Manufacturing Cos. made a contribution of $25 to the Trenton Poor Relief Fund, and Ferdinand W. Roebling has given $12,500 to the Ewing Presbyterian Church in Trenton, of which $500 annually will be at the disposal of the board of trustees.

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The fire department of the city has submitted some comparative figures on the cost of operating motor drawn fire apparatus as compared with that previously used. The report shows a saving of $57.35 and $61.26 respectively, in one month's operation of two engines.

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The Three Star Tire Co. has been incorporated here, with a capital stock of $50,000, to deal in rubber tires and tubes. Edward H. Steel, Archibald F. Updike and Richard G. Whitehead are the incorporators and promoters of the new concern, which is located at 19 South Montgomery street.

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Another tire manufacturing concern has located in Trenton, at Mulberry street and New York avenue. The property at this address, formerly occupied by the American Lamp & Brass Co., has been purchased by the Mecca Tire Co., of Philadelphia, and is being remodeled and improved for tire manufacturing purposes. This property covers about three acres and contains six brick buildings, each 30x90 feet, five of them 2½ stories high and one of 3½ stories. These will be equipped with the necessary modern machinery to turn out from 250 to 300 tires per day, and give employment to about the same number of workmen. George E. Knowles, of Carteret, at one time employed by the Thermoid Rubber Co. and later connected with the Chester Rubber Tire & Tube Co., of Chester, West Virginia, will be general manager of the new concern, whose officers are: Charles Buckley, president; William Fullerton, treasurer; W. J. Cassidy, secretary. The plant will not be ready for operation before March 1.

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The De Lion Tire & Rubber Co., whose plant was mentioned in the June number of THE INDIA RUBBER WORLD as being under construction, will commence operation about January 1, turning out a line of automobile tires and tubes. This company is offering a prize of $25 for the best slogan offered for use in adver-

tising its products as a trade mark—some distinctive term that will apply particularly to the goods and at the same time suggest that they are of Trenton origin. Suggestions should be sent to the Slogan Contest department of the Chamber of Commerce.

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John E. Thropp, of the John E. Thropp's Sons Co., has been elected director for a three-year term of the Carroll Robbins Civic Association, one of Trenton's prominent organizations.

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The Mattson Rubber Co. of New Jersey was incorporated on November 12, succeeding the Mattson Rubber Co. of New York, whose thirty year charter expired by limitation on that date. The capital stock is $200,000, the principal office is situated at Lodi, New Jersey, and the officers are: John Behrens, president; H. Lemmermann, vice-president; J. H. Behrens, secretary and treasurer. The Mattson Rubber Co. was started in the 40s by Dr. Morris Mattson. It has for many years specialized in the manufacture of unguaranteed tire casings, also manufacturing a complete line of automobile rubber accessories and raw stocks for all purposes. During the past year the capacity of the plant has been increased by over 50 per cent. through the erection of a modern addition.

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Fire broke out on December 16 in a new shop of the insulated wire factory of the John A. Roebling's Sons Co. in this city, but little damage resulted, the company's own fire corps extinguishing it with little difficulty.

* * *

The Overman Cushion Tire Co. has been incorporated with a capital stock of $150,000 to succeed the Overman Tire Co. now in the hands of receivers, and has temporarily located at Belleville, New Jersey, with office and salesroom at 250 West 54th street, New York, the old factory at Passaic having been given up. The new concern will manufacture only the Overman cushion tire, discontinuing the pneumatic type. The officers of the company are: C. A. Taussig, president; J. B. Bleiler, vice-president and sales manager; Mac C. Overman, treasurer and general manager; Alexander Clogher, secretary.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE rubber factories throughout the district are at present working fully 85 per cent. of their capacity, according to the latest reports, and there appears to be a promising outlook for a continuance of this condition or better throughout the winter. Although some anxiety was entertained at the announcement of the recent embargo on crude material, the local factories have so far escaped its effects. Most of the Rhode Island plants were fortunate in having fairly large stocks of goods and material on hand.

The early snows in northern New England, New York State and across the Lake Regions have caused a rush of work for the local factories manufacturing rubber shoes and boots, and it is predicted that there will be a good trade throughout the Winter. All of the manufacturers unite in saying that the outlook has greatly brightened since the first of the month and that the orders which are now coming in will keep the plants running close to full time until spring. Already some of the factories are behind on their deliveries from two to four weeks.

One of the most important, as well as most interesting, rumors in connection with the local rubber trade is the announcement made a few days before the Christmas holidays that Providence is to have the largest plant in the world for the production of solid motor tires. This does not mean the opening of a new plant, but will be one of the effects of another step in the policy of concentration and specialization to be taken by the United States Tire Co. beginning with the new year. At that time the manufacture of automobile tires will be discontinued at the plant of the Revere Rubber Co., which is the local branch of the United States Tire Co., and instead the making of solid tires for motor trucks, carriages and vehicles of all sorts will be concentrated at this plant, each of the three other plants of the United States Tire Co. now making solid tires as a part of their general line abandoning this line to the Providence plant.

* * *

Waste heat boilers have been installed recently in the open hearth department of the Washburn Wire Co. at Phillipsdale. The installation consists of two large vertical boilers which will utilize the heat now passing to the stacks. The waste gases from the open hearth furnaces will be drawn through the tubes by large fans placed at the top of the boilers and then will pass on to the stacks. It is estimated that 350 horsepower will be generated by each boiler at maximum capacity. This installation is in line with recent endeavors of manufacturers all over the country to utilize waste heat. It is expected that the first of these boilers will be put in operation at an early date, and that later, if they prove satisfactory, a similar installation will be made at the reheating furnaces.

* * *

A new dancing shoe made by the National India Rubber Co. at Bristol has been the subject of numerous experiments, especially in the construction of the heel. The new heel, which is to be molded, will have the appearance of a solid mass of rubber, but the center is actually hollow, thus reducing the weight.

The factory is planning to increase its tennis shoe department. The daily output of tennis shoes at present is 30,000 pairs. The Auburn Foundry Co. is making new machines to be used in the manufacture of tennis shoes, and part of the new equipment has already been received at the plant. Necessary improvements are being pushed as rapidly as possible, and it is expected that the changes will be completed in the near future.

Andrew W. Anthony, associated with the National company, has been appointed by Governor-elect R. Livingston Beeckman as a member of his personal staff with the rank of Lieutenant Colonel. Mr. Anthony is a son of the late S. Reed Anthony, of Boston, and married Miss Primrose Colt, daughter of Senator LeBaron B. Colt and niece of Col. Samuel P. Colt, president of the United States Rubber Co.

The National employes subscribed nearly $100 for the poor children of the town of Bristol, to be distributed for Christmas cheer.

* * *

Indications at the Alice Mill of the Woonsocket Rubber Co., of Woonsocket, point to an active winter. For the first time in many years the management omitted the annual shutdown of a fortnight or more during the holiday season, during which time an inventory of stock is usually taken. Instead the plant will only close for three or four days around New Year's to take stock. In view of the fact that the plant employs about 1,500 hands, the announcement that work there is unusually plentiful has been received with general satisfaction by not only those employed at the factory but by those having business relations with them. Some of the orders that have caused the exceptional rush at the Woonsocket plant have resulted from the European war. But the snowstorm already referred to was more directly responsible for the activity, as it helped to deplete the rubber stocks all over the country.

* * *

Edward R. Young, who conducts a rubber business at 35 Westminster street, Providence, filed a voluntary petition in bankruptcy on November 30 in the United States District Court and was adjudged to be bankrupt. The amount of the liabilities were given at $2,191.29 and the assets at $5,018.51. The Revere Rubber Co., and the Boston Woven Hose & Rubber Co. are the largest individual creditors.

Transatlantic Notes.

By Our Correspondent.

THE EMBARGO UPON EXPORTS.

SINCE the war broke out rubber has been receiving increasing attention at the hands of the British government, and the finishing touch was applied in the second week of November by the total prohibition of exports of the commodity from the United Kingdom. The irony of the situation lies in the fact that, whereas a few months ago the authorities were so lax about the rubber trade that the growers and dealers conceived it their duty to induce the government to declare the produce conditional contraband, the industry is now suffering from a surfeit of departmental attention. The noose has been gradually drawn tighter, and now there is grave danger that unless the restrictions are shortly relaxed the rubber plantation industry will be strangled.

The various stages by which the present *impasse* has been reached were, first of all, the order that shipment from the Orient was to be confined to the Allied ports and neutral countries in Europe. Then came the declaration that rubber was to be included in the list of conditional contraband, an order that was later converted into one of absolute contraband. The next step was the resolution that plantation rubber must be shipped only to British ports, and finally came the staggering announcement that export of the commodity from this country must entirely cease. Rightly or wrongly, the trade feels that it has scarcely received fair treatment at the hands of the government, although it is recognized that at this juncture the public weal must be the paramount consideration. It is true, however, that, while the government has in all other cases affecting trade and finance conferred with the leading men in the banking and commercial world before taking action, in the case of rubber the export embargo was resolved upon suddenly and apparently without any reference to the industry concerned. The need for exhaustive consideration of the subject before taking drastic action was the more desirable in this case because of the very complex nature of the crude rubber industry. It is rightly contended that, outside rubber circles, knowledge of the trade is of a very nebulous character, hence the general feeling that importers and others should have been consulted before a measure so uncompromising and charged with such grave consequences should have been set in motion.

It is unnecessary to go into details as to the causes which have led up to the embargo, for these are doubtless fully appreciated on both sides of the Atlantic. The evidence was pretty conclusive that Germany and Austria were obtaining supplies of rubber through neutral countries. The exports of rubber from Great Britain to certain neutral countries were enormously in excess of their normal requirements. The explanation was obvious, and the government took what they deemed to be the only safe action in the circumstances. No resentment is felt at the intention to stop the trade, but only in regard to the method employed. It is thought that alternative measures might have been adopted which would have been fully as effective while inflicting less hardship upon all concerned.

As matters stand all interests will suffer by the embargo. The outlet for the producing industry will be seriously blocked, while consumers in neutral countries will be hampered by lack of raw material. In a very short space of time these factors will become acute, and the question will naturally be asked whether the interests of the many are to be sacrificed for those of the few, especially when the latter are engaged in a trade which, if not precisely illegitimate, is of a nature that may well lead to international ruptures. Viewed impartially, it is scarcely conceivable, on common sense grounds, that the legitimate consumers of plantation rubber in neutral countries will not bring pressure to bear in the right quarters for the removal of the *raison d'etre* of the embargo. Indeed, the majority of neutrals have already done their part by prohibiting the re-export of crude rubber, and in some cases of manufactured rubber goods. But failing the necessary assurance from other quarters that the supply of raw rubber to Germany will cease, there is not the slightest doubt that the British government will not relax the present embargo one iota.

Owing to the various government restrictions issued recently, the Board of Trade returns relating to crude rubber shipments during November are of peculiar interest. In respect of both imports and exports, the latter especially, a heavy falling off is shown in comparison with the figures for the previous month. Taking imports first, it will be seen that Brazilian shipments to Great Britain fell off by more than 50 per cent. during November. On the other hand, supplies from the eastern plantation zone show a fairly big increase. In the circumstances this was only to be expected, because export to other than British ports has been prohibited. Altogether the imports have not suffered a very serious reduction and it is a moot point whether the deficiency has not been counterbalanced by direct shipment from some of the ports of origin to the consuming centers.

IMPORTS INTO THE UNITED KINGDOM.

From		1914. November.	1914. October.
French West Africa	*pounds*	69,400	9,100
Peru		97,600	105,700
Brazil		1,047,600	2,357,200
Gold Coast		6,400	17,800
Straits Settlements		4,565,800	3,226,200
Federated Malay States		1,700,700	2,048,400
Ceylon		2,298,800	1,675,400
Other Countries		1,459,600	2,251,300
		11,245,900	11,691,100

EXPORTS FROM THE UNITED KINGDOM.

To		1914. November.	1914. October.
Russia	*pounds*	1,066,500	4,703,500
Germany		.....	.....
France		497,200	254,700
United States		6,599,500	8,674,100
Other countries		649,700	409,400
		8,812,900	14,041,700

The export figures are naturally more striking, but when it is considered that the embargo upon shipment from the United Kingdom came into force on November 10, it is remarkable that the falling off was not greater. Particularly is this the case in respect of shipment to the United States. Presumably the whole of the 6,599,500 pounds exported were despatched to America during the first ten days of the month. This is at the rate of about 19,798,500 pounds for the whole of November comparing with 8,674,100 pounds in the previous month.

No doubt the extraordinary shipments to the United States during the early part of the month influenced the government in their decision entirely to prohibit export. So far, the statistical position of crude rubber in this country has not been materially affected by the embargo, because stocks were already abnormally low whilst reduced imports have partially counterbalanced the decrease in exports.

RUBBER LIFE-SAVING COLLARS.

The rubber life-saving collars recently mentioned as having been adopted by the British Admiralty for ships' crews, have quickly proved their efficacy. It is recorded in reference to the sinking of the gunboat "Niger" by a German submarine off the Kent coast that "all the boats except the whaler were smashed, but the men who were wearing new life-saving collars of india rubber promptly inflated them, and found the device of great service in keeping them afloat until they were picked up. Many lives were undoubtedly saved by these collars." By the way, the personnel of the Australian navy has now been fitted out with this handy and invaluable device.

It seems that the project to provide rubber boots for the British troops in the trenches in Flanders has been wet-blanketed by the War Office. The Rubber Growers' Association, which first broached the idea, determined not to be suppressed, is now making a presentation of a number of the boots for use in the trenches.

RUBBER SEIZED IN ANTWERP.

There is reason to believe that Germany did after all seize a considerable stock of rubber on taking possession of Antwerp. The quantity is estimated by some as being in excess of 1,000 tons, and it is even said that a big price was paid for it. The Antwerp market deals to a limited extent in plantation rubber, but it is chiefly identified with the Congo trade. Such rubber as was found there doubtless consisted mainly of African sorts. The market will be the better for its disappearance.

PLANTATIONS IN GERMAN COLONIES.

There is a fair number of British-owned plantation companies operating in German territory in Africa, and their position since the outbreak of war has given rise to some curiosity and uneasiness. Communication between this country and the estates has been entirely cut off for several months. Whether these plantations have been commandeered and are being administered for the benefit of the Fatherland is not known, but if there be any truth in the statement that Germany is most embarrassingly short of raw rubber supplies, the temptation to do so must be very great. Hitherto the plantations in this part of the world have always suffered from a dearth of labor, and it is not probable that the war has brought any relief in this respect. Very little *Hevea* is grown in this region, Ceara being the tree principally cultivated. One or two of the properties have been fairly substantial producers. At the meeting of one of these companies, held recently, it was stated that with rubber selling in the neighborhood of 50 cents, it was impossible to operate at a profit, and unless important economies could be effected it would be necessary to close down. To this end it has been proposed that three plantations in the district, namely, Lewa, Kamna and the German East African Co., should amalgamate, but no further steps in this direction will be possible until the termination of the war.

INCREASING PRODUCTION.

It is noteworthy that in spite of the disorganization of trade and industry throughout the world, there has been no very perceptible decline in the production of rubber. Even the prohibition of the export of rubber from the United Kingdom has not had any sensible influence upon the activity of the producing estates in the Orient. The crop returns for the month of November which have so far come to hand indicate, with scarcely an exception, production on a scale larger than ever. When the embargo came into force stocks in this country were exceptionally low, and as prices here have not given way to any material extent, there certainly appears no immediate necessity to curtail production. As bearing indirectly upon this subject it may be mentioned that modifications have already been made in the original order that all rubber produced in Ceylon, Southern India and British Malaya was to be shipped only to the United Kingdom. Permission was recently given to the Dunlop Co. to ship a certain quantity of raw rubber from its own plantations for the use of its factories in Japan, and it was further stated that direct shipment from plantation centres to Vladivostock would be permitted.

A TAPPING RECORD.

Some interesting facts are to hand concerning the 37-year-old *Hevea* tree in the Botanic Gardens, near Colombo, Ceylon. The tree has been tapped, with short intervals, over a period of four years and nine months, and the records show that the yield during that period totaled 392½ pounds of dry rubber. The two sections of the tree on which operations were conducted were only partially tapped, and it is said that had they been completely tapped, over 550 pounds of rubber would have been secured. The yield actually obtained averages 82.6 pounds per annum, which compares well with the 4 pounds per tree commonly expected from the average plantation specimen, planted at upwards of 100 trees to the acre. It cannot be said that the tree under notice has grown under specially favorable conditions, for it stands within 5 feet of a hard road composed of laterite. The authorities have decided that tapping shall be discontinued. It is just as well for the industry that all rubber trees are not such prolific yielders of latex.

BRITISH DEMANDS FOR WAR SUPPLIES.

Orders for 12,000 cycle tires are said to have been placed with the Moseley Co., by the British War Office, while parts for 35 motorcycles have also been ordered, the destination of which has not been announced. A new military pattern of bicycle is being made for the British War Office by the New Hudson Cycle Co., of Birmingham, which is executing an order for 1,200 cycles, and is said to be sharing in the order for 3,000 placed by the Russian government.

RUBBER SHAREHOLDERS' ASSOCIATION.

The above-named association was founded in London in September, 1913, for the protection of the interests named. It did not meet with the financial support of the trade, however, and at a recent meeting the committee unanimously recommended the winding up of the association.

BRITISH TECHNICAL INFORMATION BUREAU.

The British Secretary of State for the Colonies has authorized the formation of a "Technical Information Bureau," for the purpose of dealing with inquiries from manufacturers, merchants and others in the United Kingdom and colonies, with reference to raw materials and industrial processes. A staff of experts will be in communication with producers in the colonies and users of raw materials in England.

BIG INQUIRIES FOR WATERPROOF CAPES AND GROUND SHEETS.

An inquiry has been going the round of Manchester manufacturers for 160,000 capes, each requiring 3½ yards of 60-inch proofed cloth. The entire order will require 4,200 pieces of stout twills. For ground sheets a further inquiry is anticipated at an early date, said to be the largest ever issued for the article. Ducks 36 inches wide, rainproofed, have been booked in large quantities.

Proofers are doing their best but cannot turn out half the quantity wanted.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

TRADE CONDITIONS.

IN a general way there is but little alteration to record. Matters are much the same as they were two months ago, proofers, tire makers and surgical goods makers being still busy, while other departments, ministering to sports and pastimes, the general engineering and building trades, etc., are correspondingly slack. An important event, especially from the American point of view, is the embargo placed by the British government upon the export of plantation rubber to countries other than those of the Allies, the object being to prevent tires getting into Germany. The matter will no doubt be dealt with by the editor, and I shall not, therefore, enlarge upon it except by the remark that it has caused an important fall in the price of the commodity, to the advantage of our manufacturers, although nothing has been settled at the time of writing.

I imagine that before these lines are printed an amicable arrangement will have been come to with America whereby the latter's government will guarantee that no trade is done with Germany in raw or manufactured rubber, and that this will pave the way to the removal of the embargo. In the meanwhile the British manufacturers are getting cheaper rubber, and the wild rubber districts, which have been severely hit by the large output of plantation rubber, are, temporarily, at any rate, in for a better time.

A prediction which has happily been falsified in the event was a period of national distress owing to the effect of the war on industries. As it turns out, poor relief and unemployment is less than it was two years ago, and in some localities distress committees instead of looking after the unemployed are acting as labor recruiting agencies. This results from the drain of labor by recruiting coupled with the vast army contracts, which have made towns like Sheffield, Leeds, Northampton and Dundee so busy. The cotton trade has not benefited to any great extent, and the £700,000 worth of government work that has come to Manchester relates to various industries of which rubber is one of the most important.

A legal case of considerable importance, which has been decided in the high court, referred to the payment of money due to the London branch of the Continental Tyre & Rubber Co., Limited, the judge holding that money owing to the firm by British buyers of tires must be paid and not withheld under any plea of trading with the enemy. Leave was given to appeal, so this decision may possibly be upset; but if not it will not be acted upon in many other cases as, although quite a number of German and Austrian rubber works have agencies and branches in England, they have not the status of British limited companies.

The stoppage of payment from the enemy countries, and also from Belgium, has been a matter of concern to rubber works doing principally a continental business, though the cases are very few in which it has led to serious embarrassment. One such is that of the Lancashire Rubber Works, Limited, rubber heel manufacturers, of Manchester, whose creditors have been called together to discuss a deficiency of £2,000. The rubber heel people generally have not had at all a good time, especially as they have not shared in the prosperity arising from government contracts. Talking of contracts leads one on to say that the usual grumbles as to government contracts yielding little or no profit are heard almost to the same extent in these days of apparent prosperity as is the case in normal times. Owing to close competition prices have to be cut somewhat close, and in the interval between tendering and the placing of contracts by the authorities markets for this or that material may go against the contractor, who does not always care to cover himself in advance for orders which may not materialize. In the rush to obtain goods, accentuated by the appearance of France and other countries in the market, the ordinary procedure of obtaining tenders and awarding contracts has been somewhat varied, and all sorts of people who have got the required goods to sell at competitive prices have attained the position of government contractors. As the greatest care and discrimination is exercised by the government officials, there is no reason to suppose that the country's interests have suffered, despite the rumors which have been ventilated in parliament.

RUBBER CHEMICALS AND THE WAR.

Manufacturers of rubber chemicals report considerable activity in the demand from the home trade, but the most striking feature in the business has been the demand from Japan and various neutral countries which have hitherto presumably bought from Germany and France. Barytes has been specially in demand, though not entirely in connection with the rubber trade. With regard to sulphate and carbonate of barytes I may mention that the world's production is, roughly, 170,000 tons, to which America contributes about 50,000, the United Kingdom 45,000, Germany 25,000, Belgium 31,000 and France 14,000 tons. It will be seen, therefore, that the two leading producers are in a position eventually, if not immediately, to make up any deficit, especially as there is plenty of material, the output of which has been closely regulated by the demand and, I may add, the somewhat unsatisfactory prices, which make the mining a rather unremunerative business.

Golden sulphide of antimony is of course a manufactured article made by comparatively few firms. As the German export is stopped to a large extent, and the French makers are seriously crippled, it is not surprising that the few English makers have found their productive capacity seriously taxed to fill orders for home and abroad. The sulphur situation has been relieved by shipments both from Sicily and America, though the immediate future of the Sicilian imports seems somewhat clouded owing to the recent stoppage of exports to Germany via Switzerland. I understand that an undertaking has to be given that the sulphur is not to be used for munitions of war. I have not seen any of the American sulphur, but am told that it is decidedly inferior to the Sicilian from the rubber man's point of view, and that the advantage in price is very small.

GOLOSHES.

Severe weather, with falls of snow, has been experienced unusually early this winter both in England and on the continent. Naturally this has given a fillip to the golosh trade, the main feature of which, as far as Britain is concerned, is the steady encroachment of the home made article on what a few years ago were the preserves of the Americans. "Bostons," as the latter are termed by the dealers, are still the only sort to be obtained at some shops; elsewhere they stock both British and American makes, while in yet other establishments British goloshes only are obtainable; and if you talk about American sorts you are looked upon as somewhat out of date. The ordinary retail price for men's goloshes is 3/11 [95 cents] and 5/6 [$1.35], according to quality, the prices varying a few pence according to the status of the retailer's establishment. The average man does not inquire as to the make of the goloshes he is purchasing, or turn up the sole to see whether the stamp is Boston Rubber Shoe Co. or any other American make, North British or "Liver."

The largest makers in Great Britain are the North British Rubber Co. and the New Liverpool Rubber Co., Limited, which makes the "Liver" golosh. The storm slipper is more commonly bought by ladies than by men, while the reverse is the case with the snow boot, which is more commonly worn than it used to be. With regard to nomenclature, while the descriptive term rubbers is hardly ever met with, there is a tendency among retailers to use the likewise descriptive term overshoe instead of the older established one golosh.

STORAGE OF SOLVENTS.

The ordinary position in British rubber works is for the local authority to grant a license for the storage of a certain quantity, which must not be exceeded. Since the war, however, surveillance has been kept by the military authorities, under the powers of the Defense of the Realm act. Under these circumstances action was recently taken against the Pluviusin Co., Limited, of Mounton, near Manchester, for storing solvent in excess of their license, and a fine of £2.2.0 [$10.22] and costs was imposed, despite the plea that the company had been busy in government work, and had experienced a difficulty in getting supplies.

The Crude Rubber Washing Co., one of the various flotations of the rubber boom, appears to be slowly making its way towards prosperity in its new home at Wembley. A proposal is shortly to be brought forward to change the name of the concern to the Alperton Rubber Co., Limited. This seems a sensible move now that the business is largely concerned with the manufacture of rubber goods, and the name would be less likely to invoke painful memories in the minds of those who omitted to sell out at the high water mark.

Portugal, which has now entered into the war as one of the Allies, has no pretension to rank as a rubber manufacturing country, as it has only one rubber works, established near Lisbon somewhere about fifteen years ago.

Lieutenant-Colonel Fallows, of the Leyland & Birmingham Rubber Co., Limited, who holds a command in the East Lancashire Territorial Brigade, is now with the brigade in Egypt, where the horizon at the moment is much more clouded than was the case a month or two ago.

Mr. R. G. Stewart, I regret to report, died last November. The greater part of his life was spent in the service of the North British Rubber Co., at Edinburgh and London, and in 1900 he succeeded the late Mr. Bartlett—of detachable pneumatic tire fame—as general superintendent of the Castle Mills. It is now a good many years since I met the deceased, whose kindly disposition endeared him to a wide circle of friends.

The death has also to be recorded of Mr. John Sykes, for many years chairman of the Card Clothing Manufacturers' Association. Though his Lindley Mills at Huddersfield were devoted to the production of rubber faced cards for textile mills, he was also a cotton spinner on a large scale, and a man of considerable wealth.

Rubber pavement is on trial in the city of London on a section of the Old Kent Road, where traffic is heavy, the average being ninety tons per square foot per hour for twenty-four hours. Another section is to be laid down in Cannon street, in the very heart of the city. The Rubber Growers' Association gave 1,000 tons of plantation rubber for the experiment, and has offered an additional 1,000 tons at the nominal price of 25 cents a pound.

The pavement is made by laying jarrah wood blocks with a surface cushion of rubber held by dovetailing. The blocks are easily removable; they interlock perfectly and with watertight joints. The vibration is so much less than with any other form of pavement that a much less substantial foundation is needed.

The section in the Old Kent Road after 295 days of use shows no signs of wear, whereas an adjacent four-inch wood block pavement lost one-half an inch in thickness in the same time under the same load.

E. BUNGE & CO.

The London "Times" chronicles the sudden descent of German officers upon the office of E. Bunge & Co., Antwerp, the claim being that Belgian treasury funds had been deposited in their keeping. Mr. Edward Bunge will be remembered as the president of the Rubber Planters' Association of Belgium and as one who has been exceedingly active financially in the development of both wild and plantation rubber. Many of the plantation companies in the Federated Malay States were financed by the Bunge Association.

EDWARD BUNGE.

CLAIM TO BE ENGLISH.

R. Woolfe & Co., Limited, rubber manufacturers and waste merchants, of London, England, announce that they are a distinctly British firm, having no business or national connection with Austrians or Germans. Their entire staff is English and their ancestors began business in England more than 200 years ago.

RUBBER TIRES FOR STREET CARS.

The introduction of tires made of rubber or other silent material for street cars, was suggested by a speaker at a recent meeting of the Tramways' Association of Great Britain. He contended that a properly designed tire for street cars would exceed in durability tires now in use on motor buses and motor wagons, on which a life of 20,000 miles was common. Moreover, the wear and tear on the rails, and the cost of maintenance, would be greatly reduced.

The fact that rubber tires would eliminate noise and vibration, while a speed of 20 miles an hour could be attained, was advanced as an argument in their favor.

The Rubber Planters' Association, of London, not long ago diverted many tons of plantation rubber to street pavements, hospital floors, etc. This was to produce new uses and thus avoid a glut in the market and consequent low prices. It was enterprising but of doubtful expediency. That same rubber on the market today would be a boon to some one.

According to reports coming via Germany, there is a shortage of raw rubber in Norway, Sweden and Denmark. It appears that large quantities destined for nordish manufacturers have been detained by England. It is said that one large rubber works in Norway already has been compelled to close its doors.

NORWAY.

Motor delivery wagons are gaining in popularity in Norway and it is expected will ultimately replace horse-drawn vehicles in that country, particularly in the lighter models. A report from United States Consul General Hendrick, of Christiania, states that in that city there are 150 motor delivery vehicles, including 14 motor trucks.

RUBBER GOODS IN SPAIN.

According to the report of the Austrian Consul at Barcelona, the Spanish market affords a good outlet for rubber products, rubber shoe imports having in 1911 represented $85,000, while toys and stationers' sundries amounted to $80,000. The principal part of the goods mentioned have come from Germany and Austria-Hungary.

SWISS TRADE IN RUBBER HEELS.

When first introduced in Switzerland some years ago, the demand for rubber heels was small. Few dealers carried them, but those that did realized fair prices. This trade has now been taken up by all leather and rubber goods dealers, so that competition has eliminated much of the profit. The most popular style and quality is selling at 8*d*. (16 cents) retail.

THE FRENCH IMPORT DUTY.

A letter received from the Rubber Growers' Association, London, in regard to the French import duty on indirect rubber shipments, states that direct shipments of rubber to France are now permissible, provided the bills of lading are made out to a distinct consignee in France—the exemption applying to products of extra-European origin originally destined for France or Algeria and disembarked at British ports in consequence of the war, but not to such products in general regardless of their original destination.

MADAGASCAR SUBSTITUTING MOTOR CARS FOR RAILROADS.

The French authorities in Madagascar are said to have decided to give up the operation of the local railways, on account of the comparatively small number of persons using them, and to transport passengers exclusively by automobile. For some years the railways have been run at a great loss by the government, but since the trial operation of automobiles the cost per passenger mile has been greatly reduced. It is hoped to make the enterprise self supporting by the end of the year 1914.

GERMAN NOTES.

GERMAN and Austrian rubber manufacturers have been unable to procure their usual supply of "M. R. X." since the breaking out of hostilities. Proposals, however, have recently been made by an agent in one of the neutral countries bordering on Germany for a large supply of "M. R. X." for which there can be only one ultimate destination. The matter is yet under negotiation.

Berlin has had an interesting exhibition under the name "What the German Soldier Needs in the Field." The purpose of the enterprise has been to show to the public in general and to encourage the sale of articles which might be of use to the soldiers in the field. The German rubber industry was well represented and a great variety of rubber goods was sold at the exhibition, including waterproof coats and caps, rubber bottles, waterproof sheets, rubber socks, gutta percha sheet, etc. There has been a large demand for rubber boots, mainly those with high tops, and for pneumatic cushions.

The board of the United Harburg & Vienna Factories, at its last meeting, decided to propose to the general meeting contemplated for November a dividend of 6 per cent. The net profit amounts to $190,894, against $145,179 for the previous year. To this there should be added the profits carried over of $85,231 After writing off large sums for depreciation and reserves, the carrying forward of a further increased amount is contemplated. Since the outbreak of the war the departments working for army requirements have been well occupied. On the other hand, the difficulties of export trade have caused a reduced outturn in the departments.

Manufacturers of rubber coats and rubber clothing have sent out a circular informing their customers of a large advance in the prices of rubber coats, vests, etc. The advance has been made necessary by the high price of raw material in Germany and by the demand for rubber for the manufacture of tires and other war material.

The war has had a beneficial influence on the turnover of those retail shops specializing in rubber goods. While in ordinary times a good deal of trade has been taken away from these establishments by outfitters, shoe stores, etc., interest concentrates now in specialties, and the dealers find that they can sell not only bandages and surgical rubber goods, but also such articles as rubber coats, rubber shoes, etc.

According to advices coming from Vienna, the price of raw rubber has increased to about four times the value before the war. This, of course, has caused a considerable advance in practically all classes of rubber goods.

The report that the Dunlop Rubber Co. of Germany contributed $5,250 to a British war relief fund is denied by the company. On the contrary, they contributed to the various Red Cross stations in Germany $1,250 in cash. They also gave $1,250 worth of rubber goods for hospitals, 10,000 "helmet sponges" and an infirmary with 80 beds. They are paying their men who are in the army 50 per cent. of their wages and they have also donated two automobiles to the German Red Cross.

The Continental Caoutchouc & Gutta Percha Co. has turned one of its huge buildings into a thoroughly equipped hospital. The chief executive is Dr. Gerlach, who is well known to many manufacturers in the United States. The Continental company states that in consequence of the advance in cost of raw material, which amounts since the beginning of the war to from 60 to 75 per cent., it has been obliged to advance the price of its pneumatic tires. The new price list (No. 124) dates from August 24.

Herr Heinrich Pfeiffer, for many years business manager of the Eduard Frankenburg Rubber Factory, Hanover, has undertaken since October 1 the direction of the rubberized fabric department at the Hanover-Linden Rubber Manufacturing Co.

The Cable Works at Fröndenberg, Ruhr, have been registered for the manufacture of all descriptions of insulated wire, with a capital equaling $16,500. Herr August Köhle is business manager.

The directors of Maschinenbauan stalt Humboldt, makers of rubber machinery, Köln-Kalk, propose a dividend of 6 per cent. The trading profit was 6,144,049 marks [$1,462,284]. A special contribution to the reserve fund of 200,000 marks [$47,600] is proposed, and the same amount is set aside for the benefit of persons depending upon officials and workmen who have been called upon for active service. 1,385,083 marks [$329,650] are carried to new account. The dividend declared for the year 1912-13 was 8 per cent., from a trading profit of 5,793,573 marks [$1,377,870].

Austria-Hungary has prohibited the export of insulated wire to Belgium, France, Great Britain, Japan, Russia and Servia.

The German auxiliary cruiser *Cap Trafalgar*, which was sunk on September 14, had about 14,000 square yards of rubber flooring, which had been laid by the Gummiwerke, Fulda. This material had proved efficacious in service and had been adopted by many other steamers.

Rubber news from Germany is difficult to get and often delayed. What crude rubber there is is held at a premium of about one hundred per cent. Its use for individuals, as for motor tires, has been prohibited. Factories such as the Continental, Dunlop, Harburg-Wein and Metzler, are running, but on government orders only. The great Zeppelins, for example, take much rubber. A visitor reports seeing cloth for fifty of these craft being coated in one of their factories.

Every particle of rubber scrap in the country is being collected and turned into reclaimed rubber. It is said (not verified) that

new mats, hose, toys, and goods not absolutely necessary have also been scrapped and reclaimed. The same source also affirms that stores of hard rubber goods ready for export were condemned and ground to dust and remanufactured into electrical parts, for military use.

In this connection the late German prohibition of the export of hard rubber goods in any form takes on an added interest.

The following are included in the list of articles forbidden export by Germany: Caoutchouc, guttapercha, balata; waste rubber; oil caoutchouc for proofing; surgical instruments, with exception of obstetrical and dental; rubber for rubber hose, bandages, etc.; cable for military and general purposes; goods out of soft caoutchouc, with the exception of guttapercha paper and certain products of guttapercha for asbestos goods. Special permits must be obtained if it is desired to export any of these articles, and no permits will be granted on hose, tubes, tire covers and tires.

Among rubber goods to which attention has been given in Germany for the war are drinking bottles, tobacco boxes and other articles to help the German soldiers withstand the hardships of war. Recent additions to the military kit include "gutta percha paper" for the treatment of sore feet. This article is displayed in the druggists' windows, accompanied by a show card calling attention to its merits, and stating that its application does not involve disuse of the feet. It is wrapped around the feet before putting on the socks, so that the sore places are fully covered, thus relieving the friction caused by the socks in marching.

In addition to the regular articles needed by soldiers, there are a number of specialties which have been taken up in Germany, such as sleeping bags, ear protectors, and head, ear and nose bandages. Caps, including the "Mensur" style, which have been in the hands of bandage makers and druggists, are also now receiving the attention of the rubber trade.

The "Vogufa" Rubber Goods Factory, of Pausa, Vogtland, Saxony, has patented a substitute for rubber shoes in the form of a protector made of strong rubberized fabric, to be worn in the shoe over the stocking. Small openings on the upper part prevent the stoppage of perspiration. Even when the shoes are broken it protects the foot from moisture and cold.

A GERMAN VIEW OF SHOE MANUFACTURE.

A GERMAN manufacturer writes as follows in the columns of the "Gummi-Zeitung" on the subject of vulcanizing rubber shoes:

Of all factory made rubber articles, rubber shoes claim the greatest attention. Not only is the utmost care required in the selection of the raw materials and in the compounds, but it is particularly the vulcanization which can lead either to the production of a first class article or of the reverse.

In spite of the use of tried compounds and suitable grades of crude and reclaimed rubber, the following defects may be produced in the finished shoes by defective vulcanization: 1, Porosity of the soles; 2, blistering of the uppers; 3, sub-vulcanization and the consequent exudation of sulphur; 4, super-vulcanization or so-called "scorching"; 5, metallic appearance of the varnish.

Porosity almost exclusively arises from moisture in the raw materials. Therefore, crude and reclaimed rubber must be first dried by heat. Whiting (or like substances) can be dried in a special stove, being then carefully protected against moisture during storage. Tars, pitches or oils are first superheated in order to remove all volatile components. It is considered advisable before use to obtain laboratory tests of the separate materials for moisture. That even with such precautions porous soles may be turned out, may arise from using crude rubber with too high a resin content or which is decomposed.

The blistering of the uppers is usually due to the presence of moisture in the fabrics used. It is consequently recommended to first boil these fabrics thoroughly in vats, and to dry them carefully.

Under-vulcanization and the consequent exudation of sulphur, provided the compound has been rightly prepared, arises merely from a mistake in curing. Shoes with this defect are not bad merchandise, though the flaw renders them unsalable to the fine trade. Super-vulcanization or "scorching" causes the shoes to be unmerchantable, and may be caused by a defect in the plant, or by carelessness of the operator. Super-vulcanized shoes tear at the edges, break in the uppers and crack in the varnish.

Metallic brilliancy in the varnish of the upper is caused by the heating pipe not being tight, by which means moisture is allowed to penetrate during the vulcanization; or by the atmospheric air being too damp at the time of admission. The vulcanizing chamber ought, therefore, to be heated before use.

The following method of vulcanizing shoes, the result of many years' experiments, has been found to produce articles of good and regular quality. A horizontal vulcanizer is used, of about 8 feet in diameter and 32 feet in length; the heating coils, each acting separately, being built in as usual. At the back end of the vulcanizer in the lid, as well as in the side walls, are spaces for the recording thermometers.

In the interior of the vulcanizer at the highest and lowest points pipes are inserted, reaching from the back wall. These are provided with small openings (1/25 to 1/6 inch) toward the inside of it. Between these two pipes are placed at a higher level two other pipes; the suction and pressure pipes of the rotary mechanism driven by a small motor. The hot air is thus continually drawn from above and forced back into the oven, where it is distributed through the perforated pipe. Uniformity in the suction or pressure of the air must be tested before the apparatus is placed in operation. Sheets of metal are hung between the pipes and the shoes in order to prevent too direct a radiation of heat and to distribute the pressure of the air. The fans of the rotary mechanism should revolve at the rate of 260 to 300 revolutions per minute, and the drive must be sufficiently forcible to absorb and introduce the air with rapidity at a pressure of 22 to 29 pounds per square inch.

At the beginning of the vulcanization the air first introduced, which is charged with the fumes of varnishes, etc., is allowed to escape into the open; fresh air previously heated and dried being admitted. During the process of vulcanization the rotary mechanism is allowed to revolve several times in a reverse direction to ensure the absorption of the air and its re-introduction from above. By hanging maximum thermometers at various points of the vulcanizer the highest temperature arrived at can be recorded for future reference.

This system of vulcanization is said to give a thoroughly uniform product, and to prevent claims in regard to defects in manufacture, which were formerly unavoidable.

PLANTATION FIRES.

A fertile source of danger on plantations arises from the neglect of planters to extirpate the "lalang," which is found between their trees. The government of Cochin China has addressed a circular to the colonial administrators of the country, comprising the above view and adding that there is absolutely no risk of fire on the plantations visited, where they are carefully kept. This danger, however, exists where the planter fails to destroy the grasses and merely lets them dry where they lie. In such a case the least spark will produce a conflagration.

In conclusion it is impressed on the colonial agents that it is advisable to call the attention of planters to this source of possible danger.

A book for rubber planters—Mr. Pearson's "What I Saw in the Tropics."

THE JINRIKISHA AND ITS TIRES IN CHINA.

From Our Japanese Correspondent.

THREE kinds of jinrikishas are used in Manchuria—iron, rubber and pneumatic tired, at prices from $30 to $50. The pneumatic tire is intended for use with the Chinese type of jinrikisha, which is rather smaller than the other two. An estimate places the total number in various parts of Manchuria at—Chanchin, 650; Futien, 3,000; Reijon, 127.

Rubber tires are imported into Manchuria either through Chinese merchants in Futien, who gather them from other districts, or through Japanese dealers at Chanchin, who buy from the manufacturers in Japan. About 70 per cent. of the total are solid rubber tires and 10 per cent. rubber pneumatic tires. The solid rubber tires used on these jinrikishas cost $8.50, and the pneumatics $12.50. At Futien rubber tired jinrikishas are selling at from $36 to $45 in the cheaper grades, up to $56.25. Solid tires are imported from Tokio and Osaka.

The carriages, wheels, tires and other parts of jinrikishas are imported principally from Osaka, and assembled by the Japanese merchants at Futien, who sell the vehicles to Chinese dealers in completed form. The latter distribute them to private consumers on the instalment plan.

Dealing with other parts of China, there are in Chefoo 450 jinrikishas, those using solid rubber tires costing from $18 to $23 for common to $36 for superior grades. Wheels in conjunction with solid rubber tires cost $9 a pair. Foreigners have shown a preference for jinrikishas with solid rubber tires, but the Chinese have continued to use the cheaper iron-tired vehicle. It is anticipated, however, that improved roads will develop the use of rubber tires.

Shanghai has two kinds of jinrikishas, the Foboche with a rubber pneumatic tire—of which there are about 10,000—and the Yajiche, numbering some 2,000, with iron tires. In addition there are about 2,500 Foboche for private use. The 12,500 Foboche used in Shanghai are fitted to the extent of 80 per cent. with pneumatic rubber tires, of which 30 per cent. come from the Dunlop Rubber Co. (Far East), Limited, of Kobe, whose manufactures are guaranteed for 6 months.

In addition to the Dunlop company, the Michelin company does an excellent business in tires, the Foboche having been originally a French article, and most of the persons hiring out jinrikishas being Frenchmen. The French goods, while not guaranteed and slightly dearer, are said to be rather better than the Dunlop make. Besides the Dunlop and Michelin companies, the Continental Rubber Co., a German concern, supplies 20 per cent. of the demand under a six months' guarantee.

The jinrikishas in Shanghai require about two pairs of tires each in a year, or for the 12,500 Foboche in use, 25,000 pairs annually, with a value of $200,000 on the basis of $8 a pair.

In Hong Kong there are 2,200 jinrikishas, the majority of which have solid rubber tires, imported from the Dunlop Rubber Co., London, and other British and German firms.

Pneumatic rubber tires are not used in Hong Kong, the unevenness of the roads being responsible for the demand for a strong, solid tire. The Hong Kong jinrikisha makers import the parts from Great Britain, Germany and Japan, and ship their products to other parts of China. The largest maker in Kong Kong is Koche Konau, with a capital of $25,000 and 800 vehicles for hire.

TAPPING ON ALTERNATE DAYS.

With a view to prevent over-production, the Malacca Planters' Association recently agreed to the plan of tapping on alternate days. A meeting of the body named favored a general reduction of production by 30 per cent.

Replete with information for rubber manufacturers.—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

DECOMPOSITION OF RUBBER THROUGH MICROBES.

IN dealing with the above subject, N. L. Söhngen and J. G. Fol lately considered the following questions:

Are the mechanical properties of the portions colored by the action of microbes different from those of the uncolored rubber? Is there consequently any reason for a lower valuation of colored rubber? Is the hydro-carbon in rubber subject to the attacks of microbes?

In the second part of the article the authors speak of the micro-organisms in rubber and their influence upon its mechanical qualities. They first give a review of the subject and record their experiments regarding micro-organisms and the mechanical properties of spotted rubber. They deduce the opinion that the microbes forming the spots beyond the discoloration exercise no injurious effects on the rubber. Thus a lower valuation of spotted rubber cannot be defended. According to their opinion it is, however, advisable to prevent the growth of the micro-organisms, which can be accomplished by a suitable arrangement of the drying chambers. It is only at a certain degree of moisture that microbes are developed in rubber.

The third part of their article treats in detail of the microbes which attack rubber, the following results being obtained by the authors:

1. On air-dried rubber (containing 0.5 per cent. of water) micro-organisms cannot be developed in consequence of the lack of water.

2. When water is present in abundance, commercial rubber is a medium for the development of many kinds of bacteria and germs, to the detriment of the albumens, sugars and resins which are present. Some kinds produce red, black or brown spots without noticeably changing the mechanical properties of the rubber.

3. Two kinds of *actinomyces* often found in garden soil and sewer water, *actinomyces elastica* and *actinomyces fuscus*, are in a position to attack and assimilate the hydro-carbon in rubber.

4. From these microbes an enzyme attacking rubber and soluble in water is not obtained by separation.

5. The knowledge of the facts—first that the development of microbes can take place in moist rubber, when the rubber hydrocarbon is not decomposed, and the mechanical properties do not change, but where pigments are often given off, which diminish the market value of the rubber; and secondly—that there are kinds of *actinomyces* which can positively attack the hydrocarbon of rubber, and thus lower the viscosity, makes it desirable to again urge that it is of the greatest practical interest to prevent as far as possible the development of micro-organisms in rubber. The growth of microbes is prevented by the rubber being dried on the plantation as quickly and carefully as possible, in suitably arranged drying chambers.

[G. S. Whitby (see V. 25, P. 596 to 621 of 8th International Congress of Chemistry, New York, 1912) concluded that tackiness in rubber was caused by an enzyme, but V. Rossem (Caoutchouc et Gutta Percha, February '13, P. 6981, and Chem. Abs., '13, P. 1811) attacks these views.]

LATEX DENSITY EXPERIMENT.

A number of experiments were made during the last year to test the specific gravity of latex, from which a suitable latex hydrometer has been constructed. This machine is made by J. J. Griffin & Sons, London, and is intended for factory controls. Experiments were carried out to test the comparative value of formic and acetic acids for *Hevea* coagulation. It has been suggested that if the rubber prepared with formic acid proves equal to that produced with acetic acid the former should be substituted for the latter, being cheaper and more economical. It would be still cheaper but for the high freight charged on it by the steamship companies as being dangerous cargo.

Some Rubber Planting Notes.

THE USE OF WATER IN TAPPING.

DR. A. J. ULTEE, director of the Besoekisch Testing Station at Djember, Java, having stated that the use of water in tapping tends to reduce the volume of production, Dr. F. T. Beederode disputes this theory in a recent number of the "Indische Mercuur." He believes that with the use of water, latex flows longer than otherwise and thus increases the volume of production. He does not unconditionally reject dry tapping, but believes the use of water to be a distinct advantage. This, he contends, is particularly so where there are laborers enough so that no laborer has to care for more than 250 trees. Where the supply of labor is insufficient and each tapper is required to look after 500 to 600 trees, dry tapping, being more quickly done, he admits is preferable.

RUBBER IN SUMATRA.

According to the Imperial Institute of London there is a considerable difference in the rainfall at various points in Sumatra, but it is everywhere sufficient. Owing to the good soil rubber trees can grow at altitudes up to 1,000 feet, but are usually situated between 4 feet and 120 feet. The Assam rubber tree, *Ficus elastica*, is grown in the provinces of Benkulen, Tapanuli and Achin.

The acreage under *Hevea* increased from 400 acres in 1902 to 197,530 acres by the end of 1912, in addition to which there were plantations of *Ficus elastica*. The nominal capital in Sumatra rubber plantations at the end of 1912 was estimated at $53,000,000, of which one-half was British. Many coffee plantations have been transformed into plantations of *Hevea*.

A NEW RUBBER COAGULANT IN CEYLON.

Toddy Vinegar, the new coagulant, has already been mentioned in these columns.

The process of manufacture consists of the waste cocoanut water being allowed to ferment for four or five days, when it can be immediately used for coagulation. One or two ounces of fermented liquid will coagulate a pint of pure latex, producing a finer rubber than is obtained by the present system of using crude acetic acid. Experiments are now being made as to how long the liquid will keep, and as to whether it will stand transportation to the rubber estates.

RUBBER KEEPS BETTER THAN TEA.

With reference to the storage of rubber the "Times of Ceylon" states that at the opening of the war a good deal of rubber, tea and other products was stored in local warehouses, in view of the disturbance of business. Rubber will not deteriorate from storage, while tea after a couple of months in stock becomes a more or less unmarketable product.

CEYLON CONDITIONS—1913-1914.

Heavy investments were made some years ago by Ceylon planters, and the commercial community generally, in young rubber trees, and large returns were required from the revenue bearing estates to develop the immature plantations. The drop in rubber prices in 1913 on the London market caused real distress, and for a time threatened ruin to a number of rubber companies, and even to various commercial houses. The crisis was, however, safely passed and the market recovered somewhat toward the beginning of 1914. Among the principal difficulties planters had to contend with were the heavy rains which impeded cultivation, and the increased difficulty in getting sufficient labor from South India.

RAILWAY EXTENSION IN THE FEDERATED MALAY STATES.

The new railway line from Bukit Mertajam, a junction near the town of Penang, to Alor Star, the capital of Kedah, has been opened for traffic. It forms part of the Federated Malay States government railway system; which is thus brought closer to the Siamese frontier. The ultimate connection of the new line with the Royal Siamese Railway is in contemplation. It is anticipated that the opening up and development of Kedah will be facilitated by the improved communication thus established.

WHAT MALAYA MIGHT HAVE DONE.

In taking the chair at the inaugural lecture of the City of London College rubber course recently, Mr. John McEwan, chairman of the Rubber Growers' Association, said that there were areas of *Hevea* 10 or 11 years old, producing 750 pounds per acre. If all the planting had been uniformly successful, the 700,000 acres in Malaya would in a few years give about 234,375 tons, leaving the rest of the world out of the calculation.

In conclusion he remarked that at no very distant date such an article as rubber is bound to be produced on a scale unprofitable to a large proportion of the companies engaged in the industry. He hoped, however, that lowness of price will lead to many new applications at present not dreamt of.

EXPERIMENTS IN THE MALAY TESTING STATION.

In a communication from the Federated Malay States Information Agency, Mr. Lewton-Brain, who is in charge, describes the vulcanizing and testing station established at Kuala Lumpur, which is said to be one of the most complete in existence. He states that many experiments have been tried with a view to solving the problem of plantation rubber.

What the manufacturers complain of is not that plantation rubber is not good, but that it is not uniform; that each lot must be treated differently. In solving this problem many experiments and tests have been made on working, vulcanization, etc.

The problem of variability in plantation rubber is an extremely complicated one, and it will be years before the full value of this work can be realized. Work has at least been started on the fundamental problem. Generally speaking the large plantations are taking more care to keep methods and products uniform. Still many extractors use haphazard methods Experiments were carried out on smoking, drying, dilution of latex, coagulation, fungus spots, tackiness, etc.

RUBBER ACREAGES IN BRITISH MALAYA.

Official statistics of the planted surface in British Malaya are as follows:

	January 1, 1913.	January 1, 1914.
Federated Malay States.....*acres.*	399,197	433,324
Straits Settlements	94,263	111,316
Johore	91,827	117,022
Kelantan and Kedah.....	34,837	45,373
Trengganu	1,497	1,510
Total	621,621	708,545

MORE LIGHT IN PLANTATIONS.

Large rubber plantations in Malaya have experienced trouble in the renewal of the bark, due to the trees being too close together. The time is foreseen when such plantations will be obliged to cease tapping the older trees, the bark renewed being too thin to allow of tapping with profit. Planters remove the useless branches and then cut down the trees which prevent the development of their neighbors. This movement of giving more light is said to be getting more general.

ENGLISH VIEWS OF PROSPECTIVE RUBBER PRODUCTION.

Mr. A. Lampard, the well-known authority on rubber, has expressed the opinion that the plantation production of 1914 will amount to 70,000 tons, and that from the present acreage under plantation rubber there will be a gradual increase up to 180,000 tons.

The wisdom of England having an independent supply of rubber has been amply demonstrated by the present war. Owing to the good quality of plantation rubber and the economy of its production, he believes that the practical elimination of wild rubber will soon become an accomplished fact.

Dealing with the probable future of plantation rubber, Mr. John McEwan, chairman of the Rubber Growers' Association, thinks that the threatened check to production is likely to be only temporary. He declares that he is pessimistic as to the future of rubber, but only so far as it relates to large yields and low prices. He looks for low prices as the inevitable result of the coming large production, but the existence of these factors holds out promise of large development of trade. He adds that with plans thoroughly organized, producers have little to fear from low prices, as the high yields per acre at low costs per pound will give excellent returns on reasonable capitalizations.

WAR CONDITIONS IN STRAITS SETTLEMENTS.

In an official report Consul General Caspar L. Dreier, at Singapore, has summarized the measures taken by the Straits government to meet the conditions arising from the war. Arrangements were made for making advances on rubber to planters, in order to facilitate the working of the estates without a material reduction of labor.

War risk on general cargo shipments was taken by the government at 5 per cent., but in view of the insurance companies reducing the rate to 2 or 3 per cent. the official rate was only made use of to a slight extent.

The banks, which at first had been stringent in their action, soon relaxed this policy, with the result that produce began to move again. No local moratorium had been declared.

Statistics of the total exports for 1913 from the Straits Settlements and the Federated Malay States show: Gutta percha, $2,968,186; Para rubber, $46,847,474. The proportions sent to the United States were $66,991 and $4,366,443. The exports from the Federated Malay States alone for 1913 are given as, respectively, $26,114 and $32,524,024.

Commenting upon local conditions, the report shows total imports of about $135,000,000, including cotton blankets and piece goods to the extent of about $18,000,000. The importance of this market both as a source of supplies and an outlet for manufactures is thus illustrated.

THE FUTURE OF RUBBER PRODUCTION IN FRENCH OCCIDENTAL AFRICA.

The rubber crisis in Brazil has opened the eyes of French colonial officials to certain dangers which may result to French Occidental Africa by an undue preponderance of rubber production in the economic resources of the colony. Official inquiries which have been extended to the British rubber plantations in the East, and French plantations in Indo China, have given the impression that those plantations, in consequence of their better working methods and cheaper and more efficient labor, will be able to undersell the African product. This would threaten the destruction of the rubber production of those regions and endanger the economic life of the whole colony. It seems, therefore, necessary that rubber production in French Occidental Africa be raised to the same level as in the Federated Malay States and Indo China. As this, however, would be very difficult, it seems likely that rubber production in the colony may be discouraged in future, in favor of more promising products.

WEST AFRICAN RUBBERS.

The latest bulletin of the Imperial Institute, London, contains a group of interesting reports on various rubber samples of West African origin. These include Para rubber from the Gold Coast and Sierra Leone, and Funtumia rubber from the former source.

PARA RUBBER FROM GOLD COAST.

On the Gold Coast the government agricultural stations (notably those of Aburi and Tarquah) have very successfully undertaken the cultivation of *Hevea Brasiliensis*, besides which European cultivators have established a number of plantations, some of which have now reached the productive stage. In many parts of the country the natives are devoting attention to the tree, and tapping at the above named stations has been successful.

In tapping blocks of trees at Aburi average yields were obtained for 158 tappings of 2 pounds 10½ ounces, and for 156 tappings of 2 pounds 13 ounces. At Tarquah experimental trees eight years old gave an average yield of 3 pounds 12 ounces of dry rubber when tapped on alternate days.

A sample of smoked Para biscuit from trees thirteen years old at Aburi, received in January, 1914, and valued in July of the same year at 2*s.* 1*d.* (50.68 cents) per pound, gave the following results: Loss in washing (moisture and impurities), 0.8 per cent.

Composition of dry washed rubber:

	per cent.
Caoutchouc	94.1
Resin	2.9
Protein	2.7
Ash	0.3

PARA RUBBER FROM SIERRA LEONE.

Two samples of Para rubber produced experimentally in Sierra Leone—one of them from trees five to six years old—coagulated with lime juice and dried in smoke, showed 94 per cent. of dry, washed rubber. In composition it compared favorably with eastern plantation Para, being, however, somewhat deficient in elasticity and tenacity. This feature is attributed to the method of coagulation, and the use of acetic acid is suggested.

The second sample, from trees four to five years old, coagulated by evaporation, air-dried and smoked, yielded 92.6 per cent. of caoutchouc, and showed in physical properties superiority to No. 1. With this grade it is likewise recommended to use acetic acid in place of coagulating by evaporation, which increases the amounts of resin and protein in the rubber.

FUNTUMIA RUBBER FROM THE COLD COAST.

In January, 1914, a sample of *Funtumia* was received at the Imperial Institute from the Gold Coast, prepared by the addition of 1 per cent. of formalin to the crude latex and by drying in a smoking chamber. The rubber was clean, and its physical properties good. Analysis showed 81.7 per cent. of caoutchouc, 10.1 per cent. of resin and 7.5 per cent. of protein. In July, 1914, this quality was valued in London at from 1*s.* 10*d.* (44.60 cents) to 1*s.* 11*d.* (46.62 cents) per pound.

RUBBER IN PAPUA

According to a recent statement of Mr. A. S. Blomfield, of Melbourne, who lately visited Papua to look after his rubber interests, the total area controlled by his various companies is about 30,000 acres, of which 1,500 acres are under rubber. The first rubber trees were planted six years ago, the stumps coming from Ceylon, from which source, as well as from Singapore, seeds were subsequently obtained. Planting was on a scale of 22 x 16½ feet, or 112 trees to the acre. While the rainfall was fairly light (about 65 inches), the growth of the trees was good. Tapping commenced at the age of 3½ years, when the circumference exceeded 18 inches at 3 feet from the ground.

In 1913 7,000 trees were tapped, which produced 10,000 pounds of rubber, the best of which realized 2*s.* 3½*d.* (55.75 cents) in London.

RUBBER IMPORTS AND EXPORTS AT SANTOS.

The Santos district of Brazil imported in 1913 rubber goods to the value of $405,000 from the following countries: Great Britain, $78,000; Italy, $40,000; Germany, tires $35,000, rubber goods (unspecified) $60,000; France, tires $192,000.

The rubber exports for the first six months of the present year from that port only amounted to $3,119, as compared with $22,612 for the same period a year ago.

THE NEW DUTCH BANK FOR SOUTH AMERICA.

Much interest has been shown in the Dutch Bank for South America, which was established before the outbreak of the war, with a capital equaling $1,608,000. It contemplates operating chiefly with Argentina, attempting to secure a share of the $20,000,000 worth of trade now passing between Holland and that country. Aside from the banking institutions in the Dutch Indies, it is said to be the first of that character with Dutch capital, intended to facilitate oversea trading.

PARA COMMERCIAL ASSOCIATION.

On November 9 the Para Commercial Association celebrated the fiftieth anniversary of its foundation, in its new quarters at 33 and 34 Boulevard da Republica. After opening the proceedings, Señhor Manuel José Rebello, Jr., president of the Association, invited Major Pedro Nolasco Monteiro, representing the governor of the state, to take the chair, likewise asking the collaboration of Señhor Dr. Antonio Martin Pinheiro, mayor of Para, and other officials, including Señhor José Amando Mendes, first secretary of the association, who read the original minutes of November 9, 1864. Letters of regret were then heard from Dr. Eneas Martins, governor of the state, and from M. Ed. Payan, French consul at Para.

Dr. Eladio Lima, the official orator of the association, then delivered an eloquent address, giving an historical review of its career, in the course of which he referred to the establishment of the Practical School of Commerce. Another feature of the program was the presentation of prizes to the students of the above school whose terms had concluded in the years 1908 to 1914.

PREPONDERANCE OF HEVEA IN BRAZILIAN SHIPMENTS.

According to the report of Consul Robert Fraser, Jr., of Bahia, the exports of Brazilian rubber for 1912, the last year for which official statistics are available, were: *Hevea*, 38,151 tons; Mangabeira, 388 tons; Maniçoba, 3,724 tons; total, 42,263 tons. Bahia's proportion was 2,025 tons, comprising Mangabeira, 96 tons, and Maniçoba, 1,929 tons.

It is estimated that Bahia shipments for 1913 were only 579 tons, practically all Maniçoba, sold at about 40 cents per pound. During the last year Bahia rubber has largely gone to France, whereas a large proportion was formerly sold in the United States. Mangabeira, on account of its lack of elasticity, is used principally for rubber matting and like purposes.

For the first time in history, a shipment of beans raised in the Acre territory has arrived in Manaos. This means that the Acre rubber gatherers are not only raising their own produce, but are getting into a position to export it.

The Department of State after communicating with Ambassador Morgan at Rio de Janeiro, informs THE INDIA RUBBER WORLD that the Brazilian Government desires and intends to continue during 1915 all the American preferentials.

Mr. D. C. W. Aymors, manager of the General Rubber Co., Para, Brazil, has recently been in New York, enjoying a well-earned vacation, part of which was spent in Europe. He sailed for Para on the "Justin," December 30.

RUBBER IN BOLIVIA.

According to a French report the Bolivian production of rubber in 1912 consisted of—fina, 1,355 tons; caucho, 689 tons; sernamby, 166 tons, forming a total of 2,210 tons, against 1,644 tons in 1911. Four varieties of trees furnished the latex: *Morada*, found in low and marshy soils; *Blanca*, found on the plains; *Amarilla* and *Itaube*.

The average yield is 8 pounds per tree, but virgin trees give a larger quantity. Because of the bad methods used by the natives a long rest is necessary between the tapping periods.

The *estradas* (or lots handled by one tapper) usually contain 100 to 120 trees, often at considerable distances from each other. The tappers receive no fixed salary, but get the equivalent of 40 cents per pound for fine rubber collected, and about 24 cents per pound for caucho. These conditions might be acceptable were it not that the tappers are obliged (as in Brazil) to purchase their provisions and supplies from their employers at outrageously high prices. Bound down by this perpetual debt, they are the victims of an iniquitous system which is one cause of the decadence of wild rubber.

The tapping season lasts from May to the middle of August, and from October 1 to January 1. Rubber is usually shipped in bales of 30 to 100 pounds. Fine grades are often shipped in bulk, sernamby being sometimes cased and caucho being in bales of 100 to 150 pounds. Rubber is occasionally placed in skins, which are sold on arrival at destination.

PERUVIAN STATISTICS.

According to a detailed statistical summary in a recent issue of "Peru Today" the foreign commerce of that republic in 1913 represented: Imports, $30,443,884; exports, $45,668,890. Exports thus exceeded imports by about 50 per cent. During the last 10 years imports have increased by 40 per cent. In the exports, copper, cotton, sugar, petroleum, silver, rubber and wool held the leading places in the order quoted, rubber standing sixth, with 6,130,163 pounds, valued at $3,971,054. The figures show a reduction in 1912 of 12½ per cent. in weight and 40 per cent. in value.

PERUVIAN RUBBER EXPORTS DURING YEARS 1904 TO 1913.

	Pounds.	Value.
1904	4,896,571	$3,261,421
1905	5,598,780	4,447,913
1906	5,678,352	4,599,565
1907	6,677,091	4,645,670
1908	5,547,521	2,962,862
1909	6,177,083	5,536,512
1910	5,843,632	6,222,666
1911	4,758,503	2,979,244
1912	7,039,266	6,715,896
1913	6,130,165	3,971,055

The government has endeavored to meet the difficulties arising in the *montaña* region through the heavy fall in rubber by a tax of 8 per cent. on the exports of the article through the port of Iquitos. This tax will be paid on the cost of production, on a basis established by an official board. A reduction is contemplated in the duties on rubber exported from the Madre de Dios territory, or through the port of Mollendo, in proportion to the prices of the London market.

CHANGE IN PERUVIAN EXPORT DUTIES.

With a view to meeting the conditions due to the fall in rubber, the Peruvian government has placed the tax on rubber from Iquitos at 8 per cent. on the cost of production, to be fixed by a joint official board. It is likewise proposed to lower the duties on rubber exported from the Madre de Dios river district, or through the port of Mollendo, making same proportionate to the prices quoted in London.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

RUBBER AND BALATA NOTES FROM DUTCH GUIANA.

By Our Regular Correspondent.

THE European trouble is having a most disastrous effect on both rubber and balata undertakings. It is believed, however, by the rubber growers in the colony that the war is a blessing in disguise and that prices will be increased in the course of time. However true this may be, the present outlook for both industries is decidedly black.

Mention was made some time ago that a French combination with headquarters in Paris had formed a company to exploit certain wild rubber tracts, and that a capital of five million francs [$965,000] was to have been invested in this undertaking. It is most regrettable to have to record the fact that soon after the war broke out the promoters cabled to the colony saying they were compelled to withdraw their engagements owing to the unsettled state of the financial market. As the matter now stands the owners of these wild rubber tracts have to look about them for new investors. The United States is the only country at the present time that can produce capital, and it would be wise for the proprietors of these concessions to open negotiations with capitalists in that country. I have been informed that the lands are favorably situated and in close proximity to the capital of the colony. A railroad runs through the heart of the properties, and daily communication can be reckoned on. Transportation is cheap and rapid. There is about 74,310 hectares of land (a hectare equals 2½ acres) on which wild rubber trees grow, and an average of 14 trees per hectare has been found on examination.

The plantations that grow Para rubber, cocoa and coffee have suffered considerably since the war broke out, especially those whose products are shipped to Europe. The prices of cocoa and coffee have been extremely low, and local consumption is limited to a very few kilos per month, the bulk of produce having to be stored up against a rise in price and neutral bottoms to export the product.

It seems most unfortunate for Dutch Guiana just at this time, when the colonial crops are so plentiful and the weather conditions so favorable, that no adequate market can be found. The government statistics show that 660,578 kilograms [1,453,272 pounds] of balata was produced from January to October, 1914; 1,078,757 kilograms [2,373,265 pounds] during the same period in 1913.

There is at the time of writing more than 200,000 kilograms [448,000 pounds] of balata in the bush awaiting transportation to town, but it is said the concessionaires prefer leaving it there rather than to incur the expense of bringing it in. As I have mentioned before in previous correspondence, balata can be bought right in Paramaribo for only a few American cents per pound. There are no purchases, however, for there is no ready money. The article will deteriorate by the end of two years. If balata is kept too long and confined to a closed room, it generally becomes shrunken and loses weight.

It is interesting to mention that the majority of merchants and others in the Colony are eager to become better acquainted with American business methods. In fact, the majority of the people in Paramaribo favor United States enterprise in preference to any other, and hope that trade relations—on an extensive scale—will spring into being between the two countries.

The Government's rubber enterprise—Plantation Slootwijk—will, in the near future, be a large producer of rubber. Many thousands of florins have been expended annually on this estate and the Government feels so certain of success that a further large amount has been voted for expenses in 1915. No less than fl. 90,859.33 [$36,343.73] is to be expended. Here are some of the chief items in the estimate:

Immigration expenses	fl. 17,621.20	($7,048.48)
Labor	fl. 41,650.00	($16,660.00)
Plant material	fl. 300.00	($120.00)
Building	fl. 3,000.00	($1,200.00)
Salaries, management, overseers, etc.	fl. 11,640.00	($4,656.00)
Sick nurses, etc.	fl. 4,250.00	($1,700.00)
Tools and implements	fl. 4,000.00	($1,600.00)
	fl. 82,461.20	($32,984.48)

Slootwijk comprises 284 hectares under cultivation. The principal products are *Hevea Brasiliensis*, coffee, cocoa and bananas. The reports from this undertaking constitute a feature of interest, as showing the progress made in various cultivations. The rapid and healthy growth of the rubber trees and the satisfactory tapping returns all go to prove that in the near future—should the price of rubber increase—this undertaking ought to bring in to the Government handsome returns on the capital invested.

FRENCH COLONIAL COTTON.

According to the bulletin of the French Colonial Cotton Association the following was the cotton production of the French colonies for the years 1912 and 1913, under the auspices of the association:

	1912.	1913.
Senegal ..... *pounds.*	44,000	16,990
Upper Senegal and Niger	220,000	217,252
Dahomey	275,000	385,990
Ivory Coast	.....	87,421
New Caledonia	363,000	567,666
Tahiti	33,000	34,804
Algeria	396,000	264,000
Madagascar	7,700	.....
Total	1,338,700	1,574,123

Above figures do not include the returns from Indo-China, which colony is not under control of the association.

FINANCING THE EGYPTIAN COTTON CROP.

The Egyptian cotton crop has been estimated as 800,000,000 pounds, being above an average yield. About 100,000,000 pounds of last year's crop was carried over. These conditions are naturally felt in Egypt, cotton forming that country's only source of wealth. Egyptian banks have been accustomed to import yearly from $50,000,000 to $75,000,000 in gold to move the crop, but after the outbreak of the war gold imports practically ceased. It was then decided that the National Bank of Egypt should make advances to the planter, holding the cotton as security and issuing notes against it of the same value as gold. This plan would enable the cultivators to hold their cotton for eventual realization when the international market becomes more settled.

INDIAN COTTON CROP OUTLOOK.

The 1914 Indian cotton acreage has been estimated at 14,710,000 acres as compared with 14,833,000 acres in 1913-14 and 12,095,000 acres in 1912-13. The crop is thus considered as likely to equal the banner one of 1913-14.

Samples received in France from Morocco indicate the value of that country as a base of cotton supplies. Continuous drought has affected results in Algeria. Good progress has been made in Dahomey, but the opening up of the northern part of the colony by railway must precede any important development in that quarter.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED NOVEMBER 3, 1914.

NO. 1,115,514. Pneumatic tire. F. S. Dickinson, New York, N. Y.

1,115,548. Rubber tired wheele. W. J. Kent, New York, N. Y., assignor to Revere Rubber Co., Chelsea, Mass.

1,115,566. Wheel tire. A. A. Picard, New York, N. Y.

1,115,667. Vehicle wheel. F. A. Guth, Waverly, Ohio.

1,115,702. Inhaling device. W. Luxmore, Chicago, Ill.

1,115,734. Resilient balata ball. L. T. Petersen, Youngstown, Ohio.

1,115,875. Tennis shoe. N. E. Tousley, Watertown, and C. H. Roper, Belmont, assignors to Hood Rubber Co., Watertown—all in Massachusetts.

1,115,908. Internal bath apparatus. M. A. Dees, St. Louis, Mo.

1,115,920. Vehicle wheel. L. S. Flatau, St. Louis, Mo.

1,116,009. Composite sole and soling material. G. F. Butterfield, West Newton, Mass.

1,116,014. Hot water bottle. M. B. Clarke, Akron, Ohio.

1,116,018. Rainproof hat covering. P. Collagan, East Newark, N. J.

1,116,101. Skiving machine. E. Nall and W. C. Tyler, assignors to The Goodyear Tire & Rubber Co.—all of Akron, Ohio.

1,116,120. Wheel tire for road vehicles. R. Reid, Glasgow, Scotland.

1,116,141. Buoy comprising an envelope made of rubber cloth. E. W. Skoldberg, New York, N. Y.

1,116,256. Automobile wheel tire. L. S. Flatau, St. Louis, Mo.

Trade Marks.

57,608. R. D. Bogue, Cincinnati, Ohio. An arrow with the word *Aromints* over it. For chewing gum.

67,458. Franklin Care Co., Richmond, Va. The words *Coca-Cola*. For chewing gum.

67,698. The Savage Tire Co., San Diego, Cal. A tire with an Indian's head in the center over the word *Savage*.

77,252. Revere Rubber Co., Providence, R. I., and Chelsea, Mass. A diamond design enclosing the word *Nu-Fut*. For arch supports for boots and shoes.

79,011. New York Belting & Packing Co., New York, N. Y. The word *Volcano*. For sheet rubber machinery packing.

79,507. Block Brothers Clothing Co., St. Joseph, Mo. The words *Rain Away*. For waterproof coats.

79,716. Maryland Rubber Co., Baltimore, Md. Miniature sketch of Atlas supporting the earth, and the name *Atlas*. For bathing caps and gloves.

79,717. Maryland Rubber Co., Baltimore, Md. Sketch of Atlas supporting the earth, and the name *Atlas*. For air beds, cushions and pillows.

79,814. C. B. Kirkpatrick, Newark, N. J. The word *Vultite*. For rubber repairing compounds and adhesive cements.

80,285. Wm. Wrigley Jr. Co., Chicago, Ill. An illustration of a double-headed spear. For chewing gum.

80,286. Wm. Wrigley Jr. Co., Chicago, Ill. The word *Doublemint*. For chewing gum.

80,547. Plymouth Rubber Co., Canton, Mass. The words *Kompo*. For fabricated soles for boots and shoes.

80,689. Thermoid Rubber Co., Trenton, N. J. The word *Fordoid*. For rubber casings, inner tubes, reliners, etc.

81,555. W. B. Price, Poughkeepsie, N. Y. The word *Perfectite*. For a waterproofing compound in paste or liquid form for use on fabrics, etc.

ISSUED NOVEMBER 10, 1914.

1,116,393. Foldable life preserver. M. Despot, Dayton, Ohio.

1,116,462. Storm rubber. J. L. Moran, Corning, Cal.

1,116,464. Dual tire rim construction. F. H. Moyer, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.

1,116,550. Core. G. C. Biddle and E. R. Buys—both of Akron, Ohio.

1,116,683. Hot water bottle. A. C. Eggers, New York, N. Y., assignor to the Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Conn.

1,116,795. Slitting machine. J. A. Cameron and C. B. Birch, assignors to Cameron Machine Co.—all of New York, N. Y.

1,116,806. Tire wrapping machine. J. W. H. Dew, London, England.

1,116,825. Syringe. C. E. Kells, New Orleans, La.

1,116,835. Device for raising sunken vessels, which includes a pair of inflatable ballast members. J. S. Neumann, Great Falls, Mont.

1,116,868. Saliva ejector with flexible elastic tube. A. A. Anzelewitz, New York, N. Y.

1,116,913. Portable sink. T. R. Peregoy, assignor to D. C. Ammidon and H. L. Varian—all of Baltimore, Md.

1,116,932. Jacket for hot water bottles. J. J. Schwartz and L. R. Strauss—both of New York, N. Y.

1,116,939. Spring tire. I. J. Shipley, Tampa, Fla.

1,116,954. Machine for cutting strips from web material. C. H. Thordarson, Chicago, Ill.

1,117,007. Adjustable hand stamp. W. Dowling, New Haven, Conn.

Trade Marks.

70,907. Lee Tire & Rubber Co., Conshohocken, Pa. The word *Zig-Zag*. For rubber tires.

71,188. American Rubber Co., Boston, Mass. An illustration of a bird under the word *Eagle* in a triangle. For rubber boots and shoes.

79,206. E. C. Simon and L. Eckert—both of Pittsburgh, Pa. An ornamental design in a square with the initials *S & E*. For footwear made of rubber, etc.

80,193. R. E. Beckert, Boston, Mass. The words *Safety-First*. For boots, shoes, heels and soles made of rubber.

80,776. Pidgeon-Thomas Iron Co., Memphis, Tenn. The words *Improved Royal Rubber Roofing*. For rubber roofing.

81,412. W. B. Price, Poughkeepsie, N. Y. The word *Resisto*. For waterproofing composition for fabrics.

81,533. K. S. Shickluna, Buffalo, N. Y. An illustration of an aeroplane above the words *Over-All*. For tire repairing fluid, rim cement and rubber cements.

81,888. G. Borgfeldt & Co., assignor to Hanover Vulcanite Co.—both of New York, N. Y. An illustration of a jockey between the words *Polo Club*. For rubber combs.

ISSUED NOVEMBER 17, 1914.

1,117,168. Pneumatic knee protector. T. J. Crowley, Long Island City, N. Y.

1,117,207. Massage device. J. C. Mars, assignor to Fleur De Lis Specialty Co.—both of Chicago, Ill.

1,117,208. Massage device. J. C. Mars, assignor to Fleur De Lis Specialty Co.—both of Chicago, Ill.

1,117,210. Float valve. F. A. Mathys, Schenectady, N. Y.

1,117,327. Water bottle. M. B. Clarke, Akron, Ohio.

1,117,469. Fountain pen. O. G. Wiseman and E. R. George—both of Des Moines, Iowa.

1,117,472. Spring tire. H. J. Augustine, assignor of one-half to R. S. Litchfield—both of Independence, Kan.

1,117,481. Vehicle tire. J. T. Clark, Provo, Utah.

1,117,526. Process of making a puncture sealing composition. G. E. Seely, Redwood City, Cal.

1,117,530. Tire cover comprising alternate layers of rubber and textile material. R. Strong, Yarnborough, England.

1,117,571. Life saving suit or garment. E. F. Hickman, assignor of one-half to A. Munden—both of Norfolk, Va.

1,117,620. Semi-automatic winding machine. A. H. Adams, Brussels, Belgium, assignor to Western Electric Co., New York, N. Y.

1,117,688. Packing comprising strips of rubberized fibrous material. M. Montgomery and H. M. Stewart—both of Philadelphia—and assigned to Montgomery Brothers, Inc.—all in Pennsylvania.

1,117,691. Inflatable tire protector. C. E. Myers, Detroit, Mich.

1,117,725. Artificial limb with inflatable socket cushion. A. E. Tullis, Fargo, N. D.

1,117,774. Brake and brake liner. W. T. Bonner, assignor to The Asbestos Brake Co.—both of Trenton, N. J.

1,117,803. Apparatus for forming pneumatic tires. M. A. Dees, assignor of one-half to The American Tire Co.—both of St. Louis, Mo., and one-half to The B. F. Goodrich Co., New York ,N. Y.

1,117,839. Resilient composition. A. J. Guidry, assignor of one-third to J. May, and one-third to C. Landry—all of New Orleans, La.

1,117,840. Faucet connection for rubber tube. C. F. Hamilton, Portland, assignor to Adjustable Liquid Gauge Co.—both in Oregon.

1,117,915. Waterproof case comprising rubber gasket. W. W. Schenker, New York, N. Y.

Trade Marks.

78,922. Eberhard Faber, New York, N. Y. An illustration of a rule. For rubber erasers, etc.

80,255. L. P. Southard, Roselle, N. J. The word *Paratina*. For rubber cement.

80,591. The Omo Manufacturing Co., Middletown, Conn. The word *Elva*. For dress shields.

80,919. American Chicle Co., Inc., Jersey City, N. J. The words *Black Jack*. For chewing gum.

81,672. W. L. McGuire, San Francisco, Cal. The word *Sanospra*. For syringes.

ISSUED NOVEMBER 24, 1914.

1,117,994. Pneumatic tire. V. E. Freeman, New York, N. Y.

1,118,122. Automobile tire. J. L. Gish, South Bend, Ind.

1,118,130. Shoe. J. C. Hosmer, Medford, Mass.

1,118,149. Balloon fabric and the like. B. D. Porritt, assignor to The North British Rubber Co., Limited—both of Edinburgh, Scotland.

1,118,195. An envelope for gas bags for aerostats. J. R. Gammeter, Akron, Ohio.

1,118,227. Caster roller comprising a hard rubber sleeve. J. W. Pepple, San Antonio, Tex.

1,118,240. Attachment for fountain pens. W. A. Sheaffer, Fort Madison, Iowa.

1,118,306. Resilient wheel with pneumatic tire encircling the hub. I. H. Parker, Garden City, Mo.

1,118,359. Elastic wheel. J. Kohler, assignor of one-half to Kittie Collins—both of Chicago, Ill.

1,118,461. Cushion for billiard tables and the like, comprising a series of air tight air cells. M. L. Adler, New York, N. Y.

1,118,503. Apparatus for forming and vulcanizing rubber articles. N. W. McLeod, assignor to The American Tire Co.—both of St. Louis, Mo.

1,118,504. Apparatus for forming and vulcanizing rubber articles. N. W. McLeod, assignor to The American Tire Co.—both of St. Louis, Mo.

1,118,542. Cementing machine. E. Erickson, assignor to The Boylston Manufacturing Co.—both of Boston, Mass.

1,118,596. Apparatus for repairing india rubber goods. N. I. Spriggs, Leicester, England.

1,118,757. Vehicle tire. J. W. Gannon and W. S. Webber—both of Montgomery, Ala.

1,118,785. Automobile wheel. J. Laus, Jr., Oshkosh, Wis.

1,118,786. Pneumatic wheel. J. Laus, Jr., Oshkosh, Wis.

1,118,814. Printing stamp. H. Schmidt and F. Hubert—both of Elizabeth, N. J.

1,118,876. Hose and coupling testing appliance. R. S. Newton, Watertown, N. Y., assignor to New York Air Brake Co., of New Jersey.

Designs.

46,666. Advertising novelty. T. B. Denton, assignor to Rubber & Celluloid Harness Trimming Co.—both of Newark, N. J.

46,670. Tire. G. W. Greene, assignor to Ten Broeck Tyre Co.—both of Louisville, Ky.

46,675. Vehicle tire. B. C. Holwick, Canton, Ohio.

46,700. Vehicle tire. C. A. Schwartz, Richmond, Cal.

Trade Marks.

72,552. C. A. Daniel, Philadelphia, Pa. The words *Tree Trunk Tread.* For rubber and pneumatic tires.

75,952. Tyer Rubber Co., Andover, Mass. The word *Tyrian.* For rubber automobile tires and inner tubes and rubber tubing.

75,996. The Goodyear Tire & Rubber Co., Akron, Ohio. The words *Black Wing.* For rubber packing and machinery.

78,790. The Fair, Chicago, Ill. The word *Champion.* For rubber garden hose.

80,317. C. H. Daniels, Chicago, Ill. The words *Safety-First.* For boots and shoes of leather, rubber, etc.

80,736. The B. & R. Rubber Co., Brookfield, Mass. The word *Armortred.* For rubber soles and heels.

81,174. The United States Distributing Co., New York, N. Y. The words *Pep Pep.* For chewing gum.

81,458. A. & A. Rubber Co., South Framingham, Mass. The initials *A. & A. R. Co.* For soles and heels of shoes.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1913.
**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 4, 1914.]

15,560 (1913). Pneumatic feet for typewriters, consisting of hollow rubber balls. Continental Caoutchouc-und Gutta-Percha Cie., Hanover, Germany.

15,601 (1913). Catheter comprising a dilatable rubber bladder. Ges. G. Wolf, 18, Karlstrasse, Berlin.

15,623 (1913). Game in which elastic bands are used. F. J. L. Bollhorn, Lauenburg-on-Elbe, Germany.

*15,764 (1913). Rubber grip for the handle of a golf club, polo stick, or the like. W. H. Sandford, 606 West One Hundred and Thirteenth street, New York, N. Y., U. S. A.

*15,838 (1913). Sock suspenders. B. W. Parker, New York, N. Y., U. S. A.

15,878 (1913). Non-slipping attachments of rubber for shoes. J. H. Turner, Golf Club, Denham, Buckinghamshire.

*15,910 (1913). Spring wheel with continuous outer rigid ring and rubber ring cushions. H. F. Spelshouse, 14 North First street, Philadelphia, Pa., U. S. A.

15,963 (1913). Air chamber of a pneumatic tire. E. Breuer, 16, Rendagasse, Pilsen, Austria.

16,033 (1913). Rubber composition for the manufacture of tires, etc. J. F. Monnot, 49, Old Broad street, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 11, 1914.]

16,100 (1913). Stocking supporters. R. H. Wall and H. Wall, Limited, 4, Love Lane, Wood street, London.

16,234 (1913). Tire consisting of segmental rings of alternate wood and rubber blocks in staggered arrangement, seated on a rubber bed. S. T. Richardson and R. Price, 3A, Rea street, Birmingham.

16,241 (1913). Wheel tire. R. Reid, 59, Logan street, Polmadie, Glasgow.

*16,288 (1913). Soft core for golf ball. A. T. Saunders, Chicopee, Mass., U. S. A.

16,316 (1913). Non-slip rubber pad for pedals, etc. W. B. Wright, 65, Woodgrange Road, Forest Gate, London.

16,360 (1913). Spring wheel with rubber ring cushions. J. A. Bartz, 6, Kommandantenstrasse, Gross-Lichterfelde-West, Germany.

16,372 (1913). Apparatus for drying india rubber. Bertrams, Limited, St. Katherine's Works; R. F. Gillespie, 58, Arden street, and P. M. Matthew, 7, Ravelston Park—all in Edinburgh.

16,393 (1913). Buoyant rubber wearing apparel. A. M. A. Fort, 3, Rue Urvoye-de-St. Bedan, Nantes, and P. L. O. Groussin, 7, Rue du Champs de Mars, Rennes—both in France.

16,422 (1913). Golf bag comprising rubber disc. North British Rubber Co., and J. Hume, Castle Mills, Fountainbridge, Edinburgh.

16,539 (1913). Inhaling spray producer comprising two suction tubes and an air tube leading from a rubber bulb. G. Seifert, 13, Neue Winterfeldstrasse, Schöneberg, Berlin.

16,589 (1913). Non-skid device comprising metal plate covered with vulcanite. G. W. Beldam, Boston Lodge, Ealing, London.

16,618 (1913). Porcelain siphon head with conical rubber valve plug. D. M. W. S. Limited, and J. W. Feargus, Enfield Road, Acton, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 18, 1914.]

*16,647 (1913). Valve with rubber face. G. Hart, 1156 Erie avenue, Williamsport, Pa., U. S. A.

16,665 (1913). Detachable heel with rubber layers. E. A. Lancaster, 273, Brunswick street, Nelson, Lancashire.

*16,689 (1913). Spring wheel with continuous outer rigid ring and pneumatic cushions. W. G. Chipley, Third National Bank Building, Atlanta, Ga., U. S. A.

16,697 (1913). Rubber covered hobbles for animals. C. Allen, 35, North Frederick street, Dublin.

16,728 (1913). Coagulating latex. A. E. Berry, "Abbotsleigh," Wanstead, Essex, and A. Boake, Roberts & Co., 100, Carpenters Road, Stratford, Essex.

16,730 (1913). Rubber reinforced buttonhole for celluloid and like wearing apparel. M. Berger, 32, Neustiftgasse, Vienna.

*16,972 (1913). Elastic fabrics. W. Kops, Bretton Hall, Eighty-sixth street, New York, N. Y., U. S. A.

17,007 (1913). Rubber heel pad. W. J. Luxmoore, care of Messrs. Bridges, Sawtell & Co., 23, Red Lion Square, London.

17,029 (1913). Balata belts with leather strips. J. Dawson & Son, Leather & Balata Works, Boultham, and A. Waddington, 32, Pennell street—both in Lincoln.

17,045 (1913). Segmental rubber tire sections. J. Whiteley, 7, Avondale street, Esmund Road, Cheetham Hill, Manchester.

17,075 (1913). Feeding bottle. H. Johannes, Bucht-Strasse, Bremen, Germany.

17,099 (1913). Rubber horseshoe pad. E. F. Clewer, Stoke Pound, Bromsgrove, Worcestershire.

17,102 (1913). India rubber buffer or like springs, particularly for railway vehicles. C. W. C. Hine, "Moleway," Dorking, Surrey.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 25, 1914.]

17,152 (1913). Stocking suspenders. F. Boltze, 6, Niederwaldstrasse, Dresden, Germany.

17,193 (1913). Synthetic caoutchouc substances and intermediate products. H. Dreyfus, 69, Schutzenmattstrasse, Basle, Switzerland.

17,195 (1913). India rubber. G. Bernstein, 49, Rue St. Georges, Paris.

17,198 (1913). Collecting latex. J. R. Brown, Glugor, Penang, Straits Settlements.

17,208 (1913). Tread blocks of hard rubber secured by screws. J. M. O'Brien, 10, Rydal Road, Streatham, London.

*17,339 (1913). Toys with rubber springs. M. R. Chesney, Meny Building, Kansas City, Mo., U. S. A.

17,506 (1913). Spring wheels with pneumatic cushions. S. A. Bhisey, 10, Airedale Road, High Road, Chiswick, London.

17,582 (1913). India rubber, etc. L. Feval and J. de La Fresnaye, 2, Avenue St. Philibert, Paris.

17,592 (1913). Rubber heel support. F. J. Wood, 3, Rawes street, Burnley, Lancashire.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

471,639 (March 16). Interchangeable heel. A. A. Chaussée.

471,795 (May 4, 1914). Plastic product for use with all descriptions of wheel tires. C. A. Prada.

471,826 (March 9). Protective cover for vehicle wheel tires. R. Boyard de Lamotte.

471,852 (May 6). Perfected vulcanizing press. A. Lambrette.

471,853 (May 6). Improvements in vulcanizing presses, boilers and similar appliances. A. Lambrette.

471,857 (May 6). Mudguard for all kinds of vehicles. C. Giefing.

471,874 (May 6). Improvements in manufacture of tires. R. Strong.

471,913 (July 22, 1913). Process intended to separate vulcanized rubber from fabrics and from metallic and similar portions to which it adheres or with which it is mixed. J. Frydemane.

471,996 (July 23, 1913). Process for regeneration of vulcanized rubber. J. Frydemane.

472,051 (Marach 21, 1914). Improvements in wheels. E. F. Goodyear.

472,052 (March 21). Improvements in wheels. E. F. Goodyear.

472,167 (May 13). Pneumatic wheel fitting without air chamber. E. Dive.

472,219 (May 14). Improvements in bicycle air chambers. D. H. C. Russell.

472,186 (May 13). Appliance for immediately defining the internal pressure of any recipient and particularly of a pneumatic tire. L. Badois.

472,225 (May 15). Improvements in machines for making objects or substances composed of rubber or other adhesive material and fiber. The Arulay Syndicate, Limited.

472,245 (May 15). Mass of rubber and products obtained therefrom. E. Franz.

472,264 (May 15). Elastic wheel tires for automobiles or other road vehicles. A. Tawan.

472,268 (May 16). Apparatus for vulcanizing soles of footwear. F. A. Antoni.

472,339 (May 18). Manufacture of a solid elastic body. "Pneumelasticum" Company, Limited.

472,345 (May 18). Mudguard for all kinds of vehicle wheels, specially adapted to automobiles. F. Malraux.

472,349 (May 18). Elastic tire for wheels. M. Miller.

472,420 (May 20). Cover for pneumatic tire and other purposes. Goya Tire Company, Limited.

472,444 (March 4). Improvements in the manufacture of carcasses of pneumatic tires. Firestone Tire & Rubber Co.

472,489 (April 25). Pneumatic mudguard for all automobile vehicles. A. Vincenot.

[NOTE.—Printed copies of specification of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

280,111, Class 39b (October 11, 1913). Process for manufacture of artificial sponge. Philipp Röder-Bruno Raabe Akt.-Ges., Wien.

280,197, Class 39b (April 16, 1913). Process for treatment of synthetic substances resembling rubber, obtained through polymerization of butadiene and its homologues. Badische Anilin-und Soda Fabrik, Ludwigshafen am Rhein.

280,198, Class 39b (January 1, 1914). Process for accelerating the vulcanization of natural or artificial rubber. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen b. Köln.

280,482, Class 63c (November 27, 1913). Pneumatic tire. A. W. Livingston, Oakland, Cal.

280,483, Class 63c (November 9, 1913). Appliance for indicating escape of air from pneumatic tires. Automobilwerk Max Schachtschabel & Co., Halle a. S.

280,484, Class 63e (November 26, 1913). Anti-skid appliance for tires. T. J. Clark, Portland, Ore.

280,596, Class 12o (May 28, 1911). Process for production of isoprene. Badische Anilin-und Soda Fabrik, Ludwigshafen am Rhein.

280,660, Class 45f (December 3, 1913). Rubber tapping tool. Jules Bosch, Kohoerinan, near Manondjaja, Java.

280,763, Class 71c (September 20, 1913). Apparatus for vulcanizing shoe soles. Friedrich August Antoni, Köln.

280,848, Class 39a (November 13, 1913). Process for separation of rubber, gutta percha or balata from the latices containing these gums. D. Heinrich Collosens, Regensburger Strasse, 27, Berlin.

280,959, Class 39b (March 21, 1912). Process for production of rubber. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen b. Köln.

280,988, Class 45f (October 25, 1913). Apparatus for tapping rubber and other trees. Georg M. von Hassel, Bozener Strasse, 6, Berlin.

280,944, Class 63c (October 5, 1913). Cellular tires, air cells of which are in connection with the open air. Adolf Böttcher, Hammerdeich, 106/110, Hamburg.

GERMAN PATENTS IN FRANCE.

In the matter of French patents issued to Germans, a number of manufacturers in the south of France have urged on the government the unwisdom of the proposed drastic measures as being likely to cause retaliatory action in Germany, the patents issued to French inventors in Germany and Austria possessing special value which they would thus soon lose. French manufacturers appreciate the value of German patents, while in number they may be less than those issued in France to German inventors.

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

THIS is the season when dullness is most apparent in such chemicals as are used in common in the paint and rubber trades.

The "Massepequa," en route from Germany, is bringing 58,300 pounds of lithopone and 12,654 pounds of chemicals. The "Matanzas, which was chartered here by a syndicate of dye and chemical importers and dealers, arrived with a full load of 3,000 tons of dyes, chemicals and medicines, and is returning for another load. The oil tanker "Sun" arrived on November 29 with 4,100 tons of German chemicals.etc Recently the "El Paso" has been chartered for the return trip by a firm of chemical importers. She sailed from here with cotton. The steamer "Albatross" is also expected to arrive about the first of the year with a good sized cargo.

It is customary to add 25 per cent. to the bills for chemicals arriving from Germany on account of the war. The charge on the first cargo of the "Matanzas" was $35 per ton.

The German government will allow of the exportation of dyes and chemicals and medicines only in American steamers consigned to American importers who guarantee that they will not be diverted to the use of its allied enemies.

The English government has again prohibited the export of aniline oil, and the price has soared to 50 or 60 cents per pound. The United States imported 115,951 pounds of aniline oil in October, and exported 3,000,000 pounds of zinc compounds.

It is reported that a plant for producing dyes and chemicals will be built by the Benzol Products Co., which is controlled by Barrett, who also controls the coal tar industry in the United States, the General Chemical Co., who are large manufacturers of chemicals, and the Semet-Solvay Co., who are owners of the Solvay process of producing coke in by-product ovens, and make immense quantities of tar and benzol. The plant is to be built at Marcus Hook, Pennsylvania, and will employ 1,000 men.

Recent rulings by England and Germany place antimony sulphide and oxide on the contraband list. This will prevent shipments through the customary channels and result in consignments being made in a roundabout way, causing higher prices. Imported barytes will also go higher, as advices have been received by New York agents of European houses that no more supplies will be shipped.

PRICES OF CHEMICALS AND COMPOUNDING INGREDIENTS.

December 30, 1914.

Acetic acid, 28 per cent	*lb.*	$ 0.01¼@	$ 0.02	
Acetic acid, glacial	*lb.*	.07¾@	.08¼	
Alba whiting	*ton*	8.00 @	13.00	
Aluminum flake	*lb.*	.01½@		
Aniline oil	*lb.*	.50 @	.60	
Antimony, crimson, sulphuret of	*lb.*	.40 @	.50	
Antimony, golden, sulphuret of	*lb.*	.28 @	.30	
Arsenic sulphide	*lb.*	.12 @		
Asbestine	*ton*	16.00 @	18.00	
Barytes, domestic	*ton*	21.00 @	23.00	
Bayberry wax	*lb.*	.24 @	.27	
Beeswax, crude yellow	*lb.*	.30 @	.32	
Benzol, 90 per cent	*gal.*	.30 @		
Black hypo	*lb.*	.27 @	.30	
Blanc fixe	*lb.*	.04 @	.05	
Cadmium, yellow	*lb.*	1.25 @	1.50	
Carbon bi-sulphide	*lb.*	.06 @	.07	
Carbon gas	*lb.*	.04 @	.06	
Carbon tetra-chloride, drums	*lb.*	.15 @	.16	
Ceresin wax, white	*lb.*	.12 @	.22	
Chalk, L. B.	*lb.*	.04½@	.05½	
China clay, domestic	*ton*	8.00 @	9.00	
Coal tar naphtha	*gal.*	.28 @		
Corn oil	*lb.*	.05 @		
Fossil flour	*ton*	35.00 @		
Glycerine, C. P., bulk	*lb.*	.23 @	.24	
Graphite	*lb.*	.40 @	.60	
Green oxide of chromium	*lb.*	.30 @	.35	
Iron oxide	*lb.*	.02½@	.08½	
Infusorial earth	*ton*	30.00 @		
Ivory, black	*lb.*	.08 @	.12	
Lampblack	*lb.*	.03¾@	.07	
Lead, sublimed white	*lb.*	.07 @		
Lead, white (basic carbonate)	*lb.*	.05 @	.05¼	
Lead, white (basic sulphate)	*lb.*	.04¾@	.05	
Linseed oil, carload	*gal.*	.46 @		
Litharge	*lb.*	.05 @	.05½	
Lithopone, American	*lb.*	.04 @	.04½	
Magnesia, carbonate	*lb.*	.04¾@	.05½	
Magnesia, calcined, powder	*ton*	40.00 @	45.00	
Naphtha, V. M. & P., deodorized	*gal.*	.09 @		
Naphtha, 70 deg.	*gal.*	.23 @		
Naphtha, 76 deg.	*gal.*	.26 @		
Orange mineral, domestic	*lb.*	.08½@	.12	
Ozokerite, refined yellow	*lb.*	.25 @	.30	
Paraffine wax, domestic 120 m. p.	*lb.*	.04½@	.04¾	
Pumice stone, powder	*lb.*	.01½@	.02	
Prussian blue	*lb.*	.46 @	.48	
Rape seed oil	*gal.*	.75 @		
Red lead	*lb.*	.05½@		
Red oxide, domestic	*lb.*	.05½@	.07	
Rosin oil	*gal.*	.30 @	.55	
Shellac, fine orange	*lb.*	.16 @	.18	
Soapstone, powdered	*ton*	10.00 @	12.00	
Sulphur chloride, in drums	*lb.*	.06½@		
Sulphur, flowers	*cwt.*	2.20 @	2.60	
Talc, American	*ton*	15.00 @	20.00	
Ultramarine blue	*lb.*	.04 @	.14	
Vermilion, English	*lb.*	.90 @	1.00	
Whiting, commercial	*cwt.*	.45 @	.55	
Whiting, Paris white	*cwt.*	.70 @	.75	
Whiting, English cliffstone	*cwt.*	.75 @	1.00	
Zinc oxide, American process	*lb.*	.05⅛@		
Zinc oxide, French process, red seal	*lb.*	.07⅛@		
Zinc oxide, French process, green seal	*lb.*	.08¼@		
Zinc oxide, French process, white seal	*lb.*	.09¼@		

THE RUBBER SCRAP MARKET.

IN the early days of the month collections of boots and shoes were light, which caused dealers to look for higher prices. It was, however, understood that there were some large stocks of waste, which would affect the possibilities of an advance. Dealers were paying 7⅛@7¼ cents and getting 7⅜@7¾ cents from the mills. Rumors of sales, or offers, a little later in the month, at 8 cents were not confirmed. In the closing days of the month it becomes evident that for good-sized lots reclaimers will have to pay 8 cents. Some business has been proposed to collectors by dealers at the equivalent of the price offered by the mills. The future of the waste shoe market depends in a large measure on the extent of crude rubber importations.

Trimmed arctics are firm. Auto tires have realized 4⅝@4¾ cents, though the quantity handled at latter price is doubtless limited. Dealers have been offering $4.20@4.50. Solid tires have realized 4½@4¾ cents from mills, and bicycle tires 3¼ cents. Inner tubes have been held firmly, dealers paying 23 cents for No. 1, and getting from mills about 24 cents. Accumulations of tubes are being held by dealers.

Collections from the West are coming in slowly, and dealers are looking for higher prices from that quarter. In Boston the advances on crude rubber led to a firm tone in No. 1 tubes. Collectors in Philadelphia have not been sending in much material. Scrap rubber dealers, while meeting with a dull trade, are looking for better times in 1915.

RUBBER SCRAP PRICES PAID BY CONSUMERS FOR CARLOAD LOTS.

New York, December 30, 1914.

	Per Pound.
Boots and shoes.....*cents*	7⅛@ 7⅛
Trimmed arctics.....	5⅜@ 5¾
Auto tires.....	4⅝@ 4¾
Solid tires	5 @ 5¼
No. 1 inner tubes	21 @22
No. 2 inner tubes	11½@12½
Red tubes	13 @13½
Bicycle tires	2¾@ 3
Irony tires	1¾@ 2¼
No. 1 auto peelings.....	8¼@ 9¼
Mixed auto peelings.....	6¾@ 7
No. 1 soft white rubber.....	10¼@
White wringer rubber	6¼@ 7¼
No. 1 red scrap.....	9¼@
Mixed red scrap.....	6¼@ 7¼
Mixed black scrap.....	2¼@
Rubber car springs.....	3¼@
Horse shoe pads.....	2¼@ 2¾
Matting and packing.....	½@ ¾
Garden hose	⅝@ ¾
Air brake hose.....	3 @ 3¼
Cotton fire hose.....	2¼@

COMPARATIVE STATISTICS OF SCRAP RUBBER IMPORTS AND EXPORTS.

Figures for the month of October show United States imports of scrap rubber as follows:

	Pounds.	Value.
October, 1913	1,788,409	$132,770
October, 1914	967,994	63,113
First 10 months of 1913.....	33,534,559	2,927,205
First 10 months of 1914.....	17,504,670	1,254,104
Exports:		
October, 1913	322,543	$45,013
October, 1914	70,774	5,731
First 10 months of 1913.....	4,906,970	672,261
First 10 months of 1914.....	4,056,071	393,737

NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS.

The usual quarterly meeting of the National Association of Waste Material Dealers was held on December 15 at the Hotel Astor, New York, under the chairmanship of President Birkenstein, when various subjects were taken up, including the advance in freight rates on certain lines of waste materials. The report of the Western Traffic Committee referred to the fact of the old classification having been restored, under which combined shipments of metals, rubber and rags can be made.

CONSERVATION OF WASTE.

In his recent address at the Pittsburgh Publicity Association, Newell J. Lewis, general manager of the Pennsylvania Paper Stock Co., quoted a statement of Theodore Hofeller, of Buffalo, who has been thirty years in the waste business, as to rubber waste. The latter authority had estimated that during the year 1915 10,000,000 automobile tires would be manufactured in the United States, which, when worn out, would realize $10,000,000, on the basis of 5 to 6 cents per pound. The general advantages of the utilization of waste were forcibly presented by Mr. Lewis.

BALTIMORE FIRM CHANGES NAME.

With quarters still at 428 East Saratoga street and 428 Falls Way, Baltimore, the firm hitherto known under the name of H. Klaff & Co., will in future be styled the "National Metal and Pipe Supply Co." It will carry scrap iron as well as rubber and other watse products.

SOME AUTOMOBILE NOTES.

The United States exported during the first nine months of 1914 20,167 automobiles—637 commercial, valued at $1,066,545, and 19,530 passenger at $17,209,964—and parts, exclusive of engines, and tires, to the amount of $4,451,163. This is a slight decrease from the figures for the same period in 1913, when a total of 20,953 vehicles were exported, worth $20,301,858, and parts valued at $4,448,792. The total export of automobiles for the fiscal year ending January 30 last reached $40,000,000. Imports into the United States up to October 1, 1914, included 186 automobiles, worth $293,601, with parts, exclusive of tires, $698,624.

It is estimated that there will be made in Canadian factories during 1915 36,000 cars of United States design, the predicted production there of Fords alone being 30,000. Canada's imports of automobiles from the United States for the first nine months of 1914 totaled 3,854 cars, against 5,260 for the same period in 1913.

Three hundred automobile trucks have recently been purchased in Chicago by representatives of the Russian government, 200 three-ton and 100 five-ton.

The Massachusetts Highway Association received during the fiscal year ending November 30 last fees for automobile registration and licenses amounting to $925,964, an increase of $700 over the receipts for the previous year. During the year there were registered 77,246 cars, against 62,660 for the previous fiscal year, and the licensed drivers increased from 81,144 to 99,532. The amount received in fees will be expended for road maintenance and improvement.

A "Made in the U. S. A. Industrial Exposition" will be held at the Grand Central Palace, New York, March 6 to 13, in the movement to establish the "Made in the U. S. A." slogan or national trade-mark and increase American industry and trade. This exposition is intended to show "American Made" and "American Grown" products in practically all branches of business.

The report of the agricultural station of Annam says that the ten trees in the station in Hué which have served for experimental purposes do not develop freely. Their progress is not very satisfactory, and it seems that the climatic conditions of Central Annam differ too much from those in their native country.

Review of the Crude Rubber Market.

AS a result of embargo conditions, New York prices have advanced during December both for Para and plantation grades. In the former, the month opened at 70@71 cents, the price remaining within about a cent of that figure until the 16th, when it attained 73@74 cents. On the 18th it further advanced to 75@76 cents, at which it remains.

First latex crêpe stood on December 1 at 75@76 cents, from which point it rose by the 15th to 78@80 cents, and by the 18th to 85@87 cents, at which it has since remained.

The month is closing with a quiet market, small stocks, prices steady and few buyers. The manufacturers are not in the market, and any evidence of buying would result in advanced prices. Stocks of plantation grades are especially small, and the only cargo afloat is on the "Ghazee," now due to arrive. This was the last ship to leave Singapore after the embargo went into effect. Para stocks from Brazil are arriving regularly. About 3,000 tons have arrived during the month.

The Booth Line steamship "Denis," from Manaos and Para, is due in New York December 29, with 950 tons. The Lloyd Braziliero steamship "Sergipi," calling at Para, is due in New York January 10, with 270 tons. The Booth Line steamship "Boniface," from Manaos and Para, is due January 12 with 690 tons.

All of this rubber was sold in advance, and therefore will not affect prices on arrival.

The report that large quantities of rubber are being shipped from Para to Italy is not confirmed. A small lot of 43 tons was shipped via New York, but encountered difficulty in transhipping at this port. Another lot of 28 tons was shipped to Italy from Para by way of Rio de Janeiro. As Italy's embargo is in force, this rubber cannot eventually arrive in Germany.

Prices of plantation rubber in London were normal at the first of the month: First latex crêpe, 2*s.* 1¼*d.* [52.2 cents]; ribbed smoked sheet, 2*s.* 4½*d.* [57.77 cents]. The market has held steady since then, with a tendency towards lower figures. Latest advices show but little change, with first latex crêpe at 2*s.* 0*d.* [48.65 cents], and ribbed smoked sheet 2*s.* 3*d.* [54.73 cents].

"Macson" says stocks look small, but reminds the trade of the large quantities of rubber seized by England at Gibraltar and the north of Scotland. One small sale of this rubber has recently been made in Liverpool by order of the Prize Court brokers. Latest advices mention that the only market feature is the unusually large shipments to Canada.

Singapore auctions are held regularly with a good demand for all grades. "The India Rubber Journal" reports large business done by growers for direct shipment to America, and deplores the diverting of London's trade.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and December 30, the current date:

PARA.	Jan. 1'14	Dec. 1, '14.	Dec. 30,'14.
Islands, fine, new	60 @61	60@61	69@70
Islands, fine, old	.....	62@64	.....
Upriver, fine, new	73 @74	71@..	..@75
Upriver, fine, old	76 @79	73@75	..@78
Islands, coarse, new	28 @29	32@33	37@38
Upriver, coarse, new	44½@45	52@53	59@60
Upriver, coarse, old	.....	.....	.....
Cameta	36 @37	33@35	..@40
Caucho, upper	44 @45	52@53	..@61
Caucho, lower	.....	50@51	..@58
PLANTATION HEVEA.			
Smoked sheet ribbed	60 @61	82@84	91@93
First latex crepe	56 @57	75@76	86@87
Fine sheets and biscuits unsmoked	56 @57	66@68	.....
CENTRALS.			
Corinto	.....	46@47	58@60
Esmeralda, sausage	39 @40	46@47	58@60
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	38 @39	45@46	.....
Panama	.....	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	35 @39	45@46	58@60
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	42@44	44@45
Guayule	35 @..	34@..	38@39
Balata, sheet	.....	52@53	52@53
Balata, block	45 @50	43@44	41@42
AFRICAN.			
Lopori, ball, prime	44 @48	No supply	70@75
Lopori, strip, prime	.....	No supply	.....
Aruwimi	.....	No supply	.....
Upper Congo, ball red	.....	No supply	.....
Ikelemba	.....	No supply	.....
Sierra Leone, 1st quality	.....	No supply	.....
Massai, red	.....	No supply	.....
Soudan Niggers	.....	No supply	.....
Cameroon, ball	28 @31	45@..	..@55
Benguela	.....	34@..	36@38
Madagascar, pinky	.....	.....	.....
Accra, flake	22 @23	28@..	..@35
EAST INDIAN.			
Assam	.....	.....	.....
Pontianak	.....	.....	7½@ 8
Borneo II, or 2nd	.....	40@..	.....

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "The easier rates and improved demand for commercial paper, noted in my last report for the latter part of November, have continued through December with further ease, the best rubber names going at 4½ to 5 per cent., and those not so well known 5½ to 6½ per cent."

NEW YORK PRICES FOR NOVEMBER (NEW RUBBER).

	1914.	1913.	1912.
Upriver, fine	$0.63@$0.71	$0.73@$0.80	$1.02@$1.08
Upriver, coarse	.46@ .53	.46@ .49	.80@ .84
Island, fine	.50@ .61	.66@ .70	.94@ 1.00
Island, coarse	.27@ .32	.28@ .30	.53@ .58
Cametá	.29@ .34	.36@ .37	.55@ .58

PARA STATISTICS.

Stock, October 31 ..... *tons*	1,270
Entries for November	2,960
Total	4,230
Exports	1,810
	2,420
Held for shipment to America ..... *tons*	610
Second hands	1,660
First hands	150
Total	2,420

Arrivals of Guayule rubber for the nine months ending September were 1,075,676 pounds, valued at $440,262, against 4,675,798 pounds, valued at $2,043,813, last year. Imports of gutta percha for the nine months were 1,757,516 pounds against 381,131 pounds in same time last year, and 612,708 pounds in 1912.

Singapore.

GUTHRIE & Co., LTD., report [November 18, 1914]:

The auction sale held this morning saw full catalogues but, as was to be expected, demand was detrimentally affected by the latest restriction imposed by Government, viz.: the prohibition of export from the United Kingdom to America, and several of the more important buyers were out of the market altogether.

At the opening prices showed a decline of $15 in standard grades, and during the first half of the sale there was some fair bidding at this level. Later the demand died away and prices receded further, numerous lots having to be withdrawn without eliciting a reasonable bid.

Medium and low grades were from $8 to $10 down on the week.

The following was the course of values:

	In Singapore, Picul.*	Sterling equivalent per pound in London.	Equivalent per pound in cents
Sheet, fine smoked	$104@115	2/ @2/ 2¾	48.65@53.46
Sheet, fair to good	85@102	1/ 8⅛@1/11⅜	40.79@47.88
Sheet, unsmoked	76@ 83	1/ 6¼@1/ 7¾	36.99@40.02
Crepe, fine pale	111@...	2/ 1½@.....	51.69@.....
Crepe, good pale	96@103	1/10¾@1/11¾	45.36@48.39
Crepe, fine brown	72@ 90	1/ 5⅜@1/ 9¼	35.22@42.82
Crepe, good brown	60@ 74	1/ 2⅞@1/ 5¾	30.15@35.97
Crepe, dark	53@ 68	1/ 1⅜@1/ 4½	27.11@33.44
Crepe, barky	41@ 56	0/10⅞@1/ 2	22.04@28.38
Scrap, virgin	40@ 48	0/10⅝@1/ 0⅛	21.03@25.84
Scrap, untreated tree	32@ 40	0/ 9 @0/10⅜	18.24@21.53

*Picul = 133⅓ pounds.
Quoted in S. S. dollars = 2/4 [56 cents].

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

NOVEMBER 28.—By the steamer *Stephen* from Pará and Manaos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	262,900	22,700	96,600	15,000=	397,200
Henderson & Korn	194,700	9,000	42,400	11,100=	257,200
Meyer & Brown	115,800	26,900	87,000	10,200=	239,900
General Rubber Co	81,500	13,400	20,700	600=	116,200
Robinson & Co	89,700	.....	22,600	.....=	112,300
H. A. Astlett & Co	64,300	6,900	17,400	4,700=	93,300
Aldens' Successors, Ltd.	32,000	5,300	10,000	.....=	47,300
Adolph Hirsch & Co	22,000	2,300	2,400	.....=	26,700
Cowdrey & Co	5,800	2,000	900	.....=	8,700
Total	868,700	88,500	300,000	41,600=	1,298,800

NOVEMBER 28.—By the steamer *Stephen* from Itacoatiara:

Henderson & Korn	37,100	1,700	15,000	900=	54,700

DECEMBER 10.—By the steamer *Rio de Janeiro*, from Pará:

Arnold & Zeiss	84,800	.....	1,500	.....=	86,300
Meyer & Brown	150,600	7,000	8,000	.....=	165,600
Hagemeyer & Brunn	74,500	.....	.....	.....=	74,500
G. Amsinck & Co	10,600	.....	.....	.....=	10,600
Crossman & Sielcken	5,800	1,000	400	.....=	7,200
Rumsey & Greutert Co., Inc.	3,500	200	200	.....=	3,900
Total	329,800	8,200	10,100	.....=	348,100

DECEMBER 16.—By the steamer *Justin*, from Para and Manaos:

Meyer & Brown	288,400	33,000	328,600	65,900=	715,900
Arnold & Zeiss	327,800	66,100	101,300	62,200=	557,400
General Rubber Co	277,400	59,400	36,100	1,000=	373,900
Aldens' Successors, Ltd.	206,000	25,000	58,000	24,000=	313,000
Henderson & Korn	152,600	22,600	57,100	35,300=	267,600
Hagemeyer & Brunn	170,400	.....	.....	.....=	170,400
G. Amsinck & Co	88,800	2,100	19,900	16,000=	126,800
W. R. Grace & Co	40,400	1,900	21,500	21,000=	84,800
Robinson & Co	68,000	11,100	2,400	.....=	81,500
Johnstone, Whitworth & Co.	58,400	11,700	10,500	.....=	80,600
Davies Turner Co	35,300	.....	.....	.....=	35,300
H. A. Astlett & Co	16,600	1,700	6,600	1,800=	26,700
N. Y. Edison Co	11,800	.....	.....	.....=	11,800
S. Ross & Co	4,500	600	1,100	600=	6,800
	37,500	.....	.....	.....=	37,500
Total	1,783,900	235,200	643,100	227,800=	2,890,000

DECEMBER 22.—By the steamer *Minas Geraes*, from Para:

Arnold & Zeiss	25,000	6,400	42,900	.....=	74,300
Meyer & Brown	81,200	2,600	71,300	600=	155,700
Aldens' Successors, Ltd.	27,300	3,000	25,000	.....=	55,300
Total	133,500	12,000	139,200	600=	285,300

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to November 16, 1913 and 1914. Compiled by the Ceylon Chamber of Commerce.)

To—	1913.	1914.
Great Britain ..... *pounds*	12,233,999	15,940,685
United States	5,320,411	9,108,791
Belgium	3,358,739	2,984,009
Australia	417,593	571,773
Germany	237,657	1,037,415
Japan	222,605	226,301
Straits Settlements	97,120	42,535
Italy	42,488	1,772
Austria	30,097	.....
France	15,682	320,152
Russia	11,301	105,212
India	1,381	1,050
Holland	992	.....
Total	21,990,065	30,339,695

(Same period 1912, 11,586,700; same period 1911, 5,195,619.)

To arrive at the approximate quantity of Ceylon rubber exported for 1914 to date, deduct the quantity from the total exports. In previous years the exports of Ceylon rubber only were given.

The export figures of rubber for 1914 in the above table include the imports re-exported, viz., 3,317,075 pounds.

TOTAL EXPORTS FROM MALAYA.

(From January to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore. Nov. 4.	Malacca. Oct. 31.	Penang. Sept. 30.	Port Swetenham. Nov. 7.	Total.
Great Britain..*pounds*	21,266,446	4,055,625	13,798,133	22,841,506	61,961,710
Continent	1,885,051	36,873	522,133	1,816,538	4,260,595
Japan	1,226,490	.....	.....	.....	1,226,490
Ceylon	297,245	.....	763,333	1,389,233	2,449,811
United States	10,732,448	15,878	864,534	244,209	11,857,069
Australia	110,369	.....	.....	.....	110,369
Total	35,518,049	4,108,376	15,948,133	26,291,486	81,866,044
Same period, 1913.	23,220,183	.....	11,334,533	24,467,626	59,021,342
Same period, 1912.	11,761,547	.....	6,737,897	17,549,365	36,048,809
Same period, 1911.	5,400,798	.....	3,565,100	10,221,779	19,187,677

STRAITS SETTLEMENTS RUBBER EXPORTS.

A cable received by the Malay States Information Agency from the Colonial Secretary, Singapore, states that the export of plantation rubber during the month of October amounted to 2,006 tons as compared with 1,602 tons in the previous month and 1,144 tons in the corresponding month last year.

The following table gives the comparison month by month for three years:

	1912.	1913.	1914.
January ..... *tons*	253	784	1,181
February	274	743	1,703
March	427	898	1,285
April	387	762	1,548
May	431	814	1,309
June	398	812	1,480
July	380	1,120	1,584
August	729	1,315	1,325
September	597	1,057	1,602
October	550	1,144	2,006
Total	4,426	9,449	15,023

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

	Pounds.	
NOVEMBER 27.—By the *Santiago*=Mexico:		
G. Amsinck & Co	4,000	
American Trading Co	8,000	
Various	7,000	19,000
NOVEMBER 28.—By the *Santa Marta*=Cartagena:		
G. Amsinck & Co		500
NOVEMBER 28.—By the *El Orient*=New Orleans:		
E. Steiger & Co		10,000
NOVEMBER 28.—By the *Panama*=Colon:		
G. Amsinck & Co	16,000	
W. R. Grace & Co	50,000	
A. Gibbs & Co	1,900	67,900
NOVEMBER 28.—By the *Panama*=Colon:		
G. Amsinck & Co	5,500	
Fidanque Bros.	500	
Piza, Nephews & Co	3,000	9,000
NOVEMBER 28.—By the *Moro Castle*=Mexico:		
Madero Bros., Inc		*33,500
NOVEMBER 28.—By the *El Valle*=Galveston:		
Various		*22,500
DECEMBER 1.—By the *El Mundo*=Galveston:		
Various		*30,000
DECEMBER 5.—By the *Zacapa*=Colon:		
W. R. Grace & Co		20,000
DECEMBER 8.—By the *Monterey*=Mexico:		
J. A. Medina & Co		1,000
DECEMBER 8.—By *El Alba*=Galveston:		
Various		*22,500
DECEMBER 8.—By the *Monterey*=Mexico:		
Federico Narro		*33,500
DECEMBER 10.—By the *Scottish Prince*=Bahia:		
Adolph Hirsch & Co		67,200
DECEMBER 11.—By the *Mexico*=Mexico:		
Lawrence Johnson & Co		1,500
DECEMBER 14.—By the *Colon*=Colon:		
G. Amsinck & Co	11,100	
Pablo, Calvet & Co	9,200	
J. S. Sunbrada & Co	5,400	
C. E. Griffin	1,900	
W. R. Grace & Co	37,000	
M. L. Collantes	31,000	
L. H. Schroeder	700	
Wessels, Kulenkampff & Co	500	96,800

DECEMBER 14.—By the *Tenadores*=Colombia:

A. Held		3,500

DECEMBER 14.—By *El Norte*=Galveston:

Various		*33,500

DECEMBER 16.—By the *Nueces*=Galveston:

Various		*22,500

DECEMBER 17.—By the *Antilla*=Mexico:

G. Amsinck & Co.	15,000	
E. Steiger & Co.	11,000	
Hamburger & Stack	2,200	
American Trading Co.	25,000	
Various	10,000	63,200

DECEMBER 18.—By the *Almirante*=Colombia:

R. del Castillo & Co.	800	
A. Held	1,200	
Various	500	2,500

DECEMBER 21.—By *El Mundo*=Galveston:

Various		*45,000

DECEMBER 21.—By the *Advance*=Colon:

Lawrence Johnson & Co.	3,800	
Lanman & Kemp	2,900	
Piza, Nephews & Co.	1,800	
Pablo, Calvet & Co.	5,100	
Various	1,100	14,700

DECEMBER 22.—By the *Saramacca*=Port Limon:

Isaac Brandon & Bros.	1,000	
Eggers & Heinlein	200	1,200

DECEMBER 22.—By the *Minas Geraes*=Bahia:

Adolph Hirsch & Co.	45,000	
Aldens' Successors, Ltd.	27,600	72,600

DECEMBER 26.—By the *Manzanilla*=Mexico:

G. Amsinck & Co.	4,500	
Harburger & Stack	600	
W. Avis & Co.	3,000	
Graham Hinkley & Co.	1,500	9,600

AFRICAN.

	POUNDS.	
DECEMBER 5.—By the *Isle of Mull*=Lisbon:		
Various		154,500
DECEMBER 7.—By the *Glenstrae*=London:		
Robinson & Co.		33,500
DECEMBER 8.—By the *Britannia*=Lisbon:		
Various		35,000
DECEMBER 10.—By the *Hawaiian*=Bona:		
P. Mali	58,500	
W. H. Page	27,500	
American Congo Co.	21,000	107,000
DECEMBER 21.—By the *Adriatic*=Liverpool:		
Various		2,200
DECEMBER 23.—By the *Dundrennan*=Lisbon:		
Carleton & Moffat		135,000
DECEMBER 26.—By the *Hero*=Lisbon:		
C. B. Richard & Co.	200,000	
Ed. Maurer	82,000	
Robt. Badenhop	22,500	
W. H. Stiles	11,200	
Various	57,500	373,200
DECEMBER 28.—By the *Chicago*=Havre:		
Meyer & Brown	26,700	
Various	40,000	66,700

EAST INDIAN.

[*Denotes plantation rubber.]

	POUNDS.	
NOVEMBER 25.—By the *Marquette*=London:		
Robert Badenhop	*11,200	
Arnold & Zeiss	*11,200	
Henderson & Korn	*13,500	
Ed. Maurer	*22,500	
Earle Bros.	*5,600	
General Rubber Co.	*225,000	
Johnstone, Whitworth & Co.	*11,200	
Rumsey & Greutert Co., Inc.	*22,500	
L. Littlejohn & Co.	*45,000	
Hadden & Co.	*8,000	
Various	*215,000	*590,700
NOVEMBER 30.—By the *Tunisiana*=London:		
Meyer & Brown	*75,000	
Ed. Maurer	*25,000	
Rumsey & Greutert Co., Inc.	*13,500	
Aldens' Successors, Ltd.	*156,000	
Arnold & Zeiss	*50,000	
Charles T. Wilson	*210,000	
Various	*20,000	*549,500
NOVEMBER 30.—By the *Minnehaha*=London:		
Ed. Maurer	*22,500	
Johnstone, Whitworth & Co.	*9,000	
Hadden & Co.	*40,000	
Various	*35,000	*106,500
DECEMBER 1.—By the *Kazembe*=Singapore:		
The B. F. Goodrich Co.	*130,000	
Henderson & Korn	*85,000	
General Rubber Co.	*70,000	
Ed. Maurer	*22,500	
Various	*165,000	*472,500
DECEMBER 1.—By the *Etonian*=London:		
Meyer & Brown	*33,500	
Arnold & Zeiss	*2,200	
Earle Bros.	*11,200	
Robinson & Co.	*7,000	
Rumsey & Greutert Co., Inc.	*11,200	
Ed. Maurer	*6,000	
Charles T. Wilson	*35,000	
Michelin Tire Co.	*55,000	*161,100
DECEMBER 7.—By the *Glenstrae*=London:		
Arnold & Zeiss	*12,500	
Rubber Trading Co.	*4,500	
Earle Bros.	*1,500	*18,500
DECEMBER 7.—By the *St. Egbert*=Singapore:		
Meyer & Brown	*4,500	
The B. F. Goodrich Co.	*140,000	
L. Littlejohn & Co.	*56,000	
Henderson & Korn	*105,000	
Arnold & Zeiss	*125,000	
Hadden & Co.	*11,200	
Johnstone, Whitworth & Co.	*35,000	
Ed. Boustead	*3,500	
Various	*350,000	*830,200
DECEMBER 4.—By the *City of Delhi*=Colombo:		
Rubber & Guayule Agency, Inc	*215,000	
Meyer & Brown	*135,000	
W. R. Grace & Co.	*50,000	
Various	*1,300,000	*1,700,000
DECEMBER 5.—By the *Kabinga*=Colombo:		
Rubber & Guayule Agency, Inc.	*100,000	
Meyer & Brown	*45,000	
W. R. Grace & Co.	*11,200	
W. Stiles & Co.	*11,200	
Various	*72,200	*239,600
DECEMBER 9.—By the *Orduna*=Liverpool:		
Robert Badenhop	*11,200	
Various	*125,600	*136,800
DECEMBER 14.—By the *Yeddo*=Colombo:		
Rubber & Guayule Agency, Inc.	*105,000	
Meyer & Brown	*80,000	
W. Stiles	*33,500	
Johnstone, Whitworth & Co.	*2,200	
Various	*270,000	*490,700
DECEMBER 18.—By the *Menominee*=London:		
Ed. Maurer	*27,000	
Johnstone, Whitworth & Co.	*4,500	
Arnold & Zeiss	*9,000	
General Rubber Co.	*11,200	
Various	*22,000	*73,700
DECEMBER 21.—By the *Minnewaska*=London:		
Various		*9,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—OCTOBER, 1914.

Imports:	Pounds.	Value.
India-rubber	12,693,731	$5,756,507
Balata	381,708	133,633
Guayule	98,583	22,074
Gutta-Percha	40,264	7,638
Gutta-Jelutong (Pontianak)	545,216	28,301
Total	13,759,502	5,948,153
Exports:		
India-rubber	254,656	139,972
Balata	166,066	72,146
Rubber scrap, imported	360,997	24,487
Rubber scrap, exported	64,176	4,186

PORT OF PORT HURON, MICHIGAN—OCTOBER, 1914.

Imports:		
India-rubber scrap	12,482	2,845

PORT OF NEW YORK—NOVEMBER, 1914.

Imports:	Pounds.	Value.
India-rubber	11,990,361	$5,401,579
Balata	336,306	110,821
Gutta-Percha	73,740	12,356
Total	12,400,407	$5,524,756
Exports:		
India-rubber	754,564	411,618
Balata	62,740	21,464
Rubber scrap, exported	11,851	1,434

PORT OF PHILADELPHIA—NOVEMBER, 1914.

Imports:	Pounds.	Value.
Rubber scrap	29,745	$1,278

PORT OF CHICAGO—NOVEMBER, 1914.

Imports:		
India rubber, scrap	50,263	$2,961

PORT OF SAN FRANCISCO—NOVEMBER, 1914.

Imports:		
India rubber	4,400	$2,427

PORT OF NEW ORLEANS—NOVEMBER, 1914.

Imports:		
India rubber	40,855	$21,493

PORT OF BOSTON—NOVEMBER, 1914.

Imports:		
Gutta percha	4,421	$534
India rubber	2,227	468

PORT OF DETROIT—NOVEMBER, 1914.

Imports:		
India rubber, scrap	14,498	$2,921
Exports:		
Rubber scrap, exported	796	$52
Rubber, reclaimed, exported	12,699	2,480

PORT OF NIAGARA FALLS—NOVEMBER, 1914.

Exports:		
India rubber	146,547	$82,173

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS DURING THE MONTH OF OCTOBER, 1914.

	NEW YORK.					EUROPE.					GRAND
EXPORTERS—	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL.
Zarges, Berringer & Co. *..kilograms*	116,486	13,534	88,361	15,923	234,304	145,903	19,837	36,335	13,013	215,088	449,392
Ad. H. Alden, Ltd.	27,370	4,760	42,130	11,311	85,571	70,069	10,746	5,332	38	86,185	171,756
General Rubber Co. of Brazil	169,442	23,582	80,227	20,868	294,119	15,300	850	.....	.....	16,150	310,269
Suarez, Hermanos & Co., Ltd.	48,680	1,845	28,917	34,401	113,843	.....	.....	.....	.....	.....	113,843
R. O. Ahlers & Co.—J. Marques	189,783	24,140	91,549	26,545	332,017	79,822	.....	30,360	2,765	112,947	444,964
Pires, Teixeira & Co.	27,200	1,530	17,610	.....	46,340	26,180	170	.....	.....	26,350	72,690
Sundry exporters	25,427	2,653	1,044	3,805	42,929	17,680	1,360	330	17,550	36,920	79,849
Itacoatiara, direct	.....	.....	.....	.....	.....	4,200	450	1,800	.....	6,450	6,450
	604,388	72,044	359,838	112,853	1,149,123	359,154	33,413	74,157	33,366	500,090	1,649,213
Manáos, direct	630,712	117,104	115,513	54,102	917,431	384,665	48,547	40,093	52,372	525,677	1,443,108
Iquitos, direct	144,574	16,870	24,724	79,804	265,972	58,230	1,492	21,242	30,019	110,983	376,985
Total, October, 1914	1,379,674	206,018	500,075	246,759	2,332,526	802,049	83,452	135,492	115,757	1,136,750	3,469,276
Total, October, 1913	899,923	182,047	371,999	216,394	1,670,363	1,100,692	92,277	130,921	182,652	1,506,542	3,176,905

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RUBBER STATISTICS FOR LONDON AND LIVERPOOL.

GOW, WILSON & STANTON, LTD., report [November, 1914]:

	Imports.	Deliveries.	Stocks, 1914.	Stocks, 1913.	Stocks, 1912.
London:					
Plantation ...tons	2,787	2,300	3,681	3,732	2,530
Other kinds ...	125	194	820	782	817
Total ...	2,912	2,494	4,501	4,514	3,347
Liverpool:					
Pará ...	441	577	207	424	263
Other kinds ...	96	292	343	1,240	606
Total ...	537	869	550	1,664	869
Total London and Liverpool.	3,449	3,363	5,051	6,178	4,216

The following quantities represent the figures in tons of the English rubber imports and exports for the first eleven months of the last three years:

ENGLISH RUBBER STATISTICS. FIRST 11 MONTHS.

IMPORTS.	1912.	1913.	1914.
Plantation ...tons	19,068	28,844	34,526
Other kinds ...	30,192	35,608	25,157
Total ...	49,260	64,452	59,683
Exports ...	33,508	41,193	43,577
(For the month of November alone.)			
Plantation ...	2,028	2,920	3,823
Other kinds ...	3,028	3,115	1,197
Total ...	5,056	6,035	5,020
Exports ...	3,551	4,352	6,269

PLANTATION AND BRAZILIAN RUBBER PRODUCTION

W. H. RICKINSON & SON report [December, 1914]:

PLANTATION PRODUCTION.

	1914 F. M.S.	Straits Settlements.	Ceylon.	Rest.	Total per month.	Totals month on month.
January...tons	2,542	1,181	1,333	185	5,241	5,241
February ...	2,364	1,703	1,459	158	5,684	10,925
March ...	2,418	1,285	1,309	102	5,114	16,039
April ...	2,151	1,548	757	66	4,522	20,561
May ...	2,069	1,309	819	65	4,262	24,823
June ...	2,306	1,460	1,070	86	4,922	29,745
July ...	2,971	1,584	1,156	142	5,853	35,598
August ...	1,850	1,325	.....	...	4,000	39,598*
September ...	2,903	1,602	.....	...	5,300	44,898*
October ...	.....	2,006	.....	...	5,000	49,898
November ...	.....	.....	.....	...	5,500	55,398
December ...	.....	.....	.....	...	.....	.....
Total ...	21,574	15,023	7,903	804	55,398	.....

*Estimated.

BRAZILIAN PRODUCTION, ETC.

	1914 Receipts at Para.	Totals month on month.	*Para visible supply.	†World's stock. (all kinds)	†World's visible supply. (all kinds)
January ...tons	4,430	4,430	6,960	11,768	19,268
February ...	4,600	9,030	9,080	11,850	22,202
March ...	4,850	13,880	8,350	12,150	23,800
April ...	3,830	17,710	7,500	12,300	24,000
May ...	2,890	20,600	6,793	11,369	21,500
June ...	2,050	22,650	5,090	12,869	21,939
July ...	1,340	23,990	3,380	11,021	21,160
August ...	1,610	25,600	3,400	11,300	21,210
September ...	2,400	28,000	3,970	10,640	22,020
October ...	2,980	30,980	4,260	10,250	20,041
November ...	.....	.....	.....	.....	.....
December ...	.....	.....	.....	.....	.....
Total ...	30,980	.....	58,783	115,517	217,140

*And Caucho. †Estimated.

BALBUSE GUM DUTIABLE.

The Assistant Secretary of the Treasury has instructed the Collector of Customs, New York, that "Balbuse Gum" which has been imported free as crude rubber, has been washed, cleaned, dried and pressed into sheets for convenience in handling and transportation. It will be therefore be subjected to a duty of 15 per cent. under paragraph 385 of the tariff of the 3rd of October, 1913.

1915.

4]:

1912.
2,530
817
3,347
263
606
869
4,216

of the
months

Totals month month.
5,241
0,925
6,039
0,561
4,823
9,745
5,598
9,598*
4,898*
9,898
5,398
.....
.....

World's visible supply. (all kinds)
19,268
22,202
23,800
24,000
21,500
21,939
21,160
21,210
22,020
20,041
.....
.....
7,140

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